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"The State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania."

BENJAMIN LEE, A. M., M. D.,
Secretary.

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FIRST ANNUAL REPORT

OF THE

STATE BOARD OF HEALTH

AND

VITAL STATISTICS

BOSTON MEDICAL LIBRARY ASS'N. AUG 11 1887

OF THE

COMMONWEALTH OF PENNSYLVANIA.

Transmitted to the Governor, December 7, 1885.

HARRISBURG:
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1886.

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8/11/87.

COMMONWEALTH OF PENNSYLVANIA,
STATE BOARD OF HEALTH AND VITAL STATISTICS,
HARRISBURG, *December 7, 1885.*

To His Excellency ROBERT E. PATTISON, *Governor:*

SIR: In compliance with the provisions of section ten, of the "Act to establish a State Board of Health for the better protection of life and health, and to prevent the spread of contagious and infectious diseases in this Commonwealth," approved June 3, 1885, I have the honor to transmit to you the First Annual Report of the Board, from the date of its organization, July 2, 1885.

BENJAMIN LEE,
Secretary.

RESOLUTION ADOPTED JULY 2, 1885.

Resolved, That no papers shall be published in the Annual Report of this Board, except such as have been ordered or approved for purposes of such publication by a majority of the members of the Board, and that any such paper shall be published over the signature of the writer, who shall be considered as entitled to the credit of its production, as well as responsible for the statement of facts and for the opinions therein contained.

RESOLUTION OF THE BOARD RELATIVE TO PAPERS PUBLISHED IN ITS ANNUAL REPORT.

Resolved, That no papers shall be published in the Annual Report of this Board except such as are approved for the purposes of such publication by a majority of the members of the Board, and that any such paper shall be published over the signature of the writer, who shall be considered as entitled to the credit of its production, as well as responsible for the statement of facts reported, and the opinions expressed therein.

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CONSTITUTION AND BY-LAWS

OF THE

State Board of Health and Vital Statistics.

The Constitution of the STATE BOARD OF HEALTH AND VITAL STATISTICS OF THE COMMONWEALTH OF PENNSYLVANIA is the act of Legislature establishing the Board, approved June 3, 1885, of which the following is the correct text:

AN ACT

To establish a State Board of Health, for the better protection of life and health, and to prevent the spread of contagious and infectious diseases in this Commonwealth.

SECTION 1. *Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania, in General Assembly met, and it is hereby enacted by the authority of the same,* That the Governor, by and with the advice and consent of the Senate, shall appoint six persons, a majority of whom shall be physicians of good standing, graduates of regularly chartered and legally constituted medical colleges, and of not less than ten years' experience in the practice of their profession, and one of whom shall be a civil engineer, who, together with the secretary, the mode of whose appointment is hereinafter provided for, shall constitute and be designated as the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania. Of the six persons first appointed, two shall serve for two years, two for four years, and two for six years from the first day of July next following their confirmation; and the Governor shall thereafter bi-ennially appoint, by and with the advice and consent of the Senate, two persons, of the same professions as those whose terms of office have just expired, to be members of said board, to hold their offices for six years from the first day of July next following their confirmation, and until their successors are appointed, excepting the secretary, who shall continue in office as hereinafter provided; but any member may be re-appointed. Any vacancy occurring in said board during a recess of the Legislature shall be filled by the Governor until the next regular session of the same.

SECTION 2. As soon as possible after the appointment of the first six

persons as aforesaid, they shall meet in the office of the Secretary of the Commonwealth, and shall proceed, under the direction of the latter officer, to determine by lot which of them shall serve for the respective terms of two, four and six years. Before entering upon the duties of the office they shall take the oath prescribed for State officers by the Constitution of the State, and shall file the same in the office of the Secretary of the Commonwealth, who, upon receiving the said oath of office, shall issue to each a certificate of appointment for his respective term of office determined as aforesaid; upon receiving which they shall possess and exercise the powers, and perform the duties, of said board as defined in this act. Immediately after having taken the oath of office, they shall organize by electing one of their number to be president, and by appointing a proper person, who shall be a physician of good standing, of not less than ten years' professional experience, and a graduate of a legally constituted medical college, to be secretary of said board, who shall hold his appointment until removed by the appointment of his successor or otherwise. The board may elect one of its own members secretary, in which case the vacancy thus created shall be filled by the Governor in the same manner as a vacancy caused in any other way. The president shall be elected annually. No member of the board except the secretary shall, as such, receive any salary; but the actual traveling and other expenses of any member, while engaged on the actual duties of the board, shall be allowed and paid on presentation to and approval by the Auditor General of an itemized account with vouchers annexed.

SECTION 3. The secretary shall be the executive officer of the board, and shall have all the powers and privileges of a member of said board, except in regard to voting upon matters relating to his own office and duties as secretary. He shall receive an annual salary of two thousand dollars, which shall be paid him in the same manner that salaries of other State officers are paid; and such necessary expenses as the Auditor General shall audit, on presentation of an itemized account with vouchers annexed and the certificate of the board, shall be allowed him.

SECTION 4. The said board shall meet at least once every six months, and may also hold special meetings as frequently as the proper and efficient discharge of its duties shall require in the capitol building at Harrisburg (unless otherwise ordered), and the rules or by-laws of the board shall provide for the giving of proper and timely notice of all such meetings to every member of the board. The Secretary of Internal Affairs shall provide and furnish such apartments and stationery as said board may require in the discharge of its duties. A majority of the members of the board shall, at any regular, called or adjourned meeting, organize and constitute a quorum for the transaction of business.

SECTION 5. The State Board of Health and Vital Statistics shall have the general supervision of the interests of the health and lives of the citizens of the Commonwealth, and shall especially study its vital statistics. It shall make sanitary investigations and inquiries respecting the causes of

disease and especially of epidemic diseases, including those of domestic animals, the sources of mortality, and the effects of localities, employments, conditions, habits, food, beverages and medicine, on the health of the people. It shall also disseminate information upon these and similar subjects among the people. It shall, when required by the Governor or the Legislature, and at such other times as it deems it important, institute sanitary inspections of public institution or places throughout the State. It shall codify and suggest amendments to the sanitary laws of the Commonwealth, and shall have power to enforce such regulations as will tend to limit the progress of epidemic diseases.

Section 6. In cities, boroughs, districts and places having no local board of health, or in case the sanitary laws or regulations in places where boards of health or health officers exist should be inoperative, the State Board of Health shall have power and authority to order nuisances, or the cause of any special disease or mortality, to be abated and removed, and to enforce quarantine regulations, as said board shall direct.

Any person who shall fail to obey, or shall violate, such order shall, on conviction, be sentenced to pay a fine of not more than one hundred dollars at the discretion of the court.

Section 7. It shall be the duty of the State Board of Health and Vital Statistics to have the general supervision of the State system of registration of births, marriages and deaths, of prevalent diseases, and of practitioners of medicine and surgery, to prepare the necessary methods, forms and blanks for obtaining and preserving such records, and to insure the faithful registration of the same in the several counties and in the Central Bureau of Vital Statistics at the capital of the State. The said board shall recommend such forms and amendments of laws as shall be deemed to be necessary for the thorough organization and efficiency of the registration of vital statistics throughout the State. The secretary of the State Board of Health and Vital Statistics shall be the superintendent of registration of vital statistics; as supervised by said board, the clerical duties and safekeeping of the bureau of vital statistics thus created shall be provided for by the Secretary of Internal Affairs, who shall also provide and furnish such apartments and stationery as said board shall require in the discharge of such duties.

Section 8. It shall be the duty of all health officers and boards of health in the State to communicate to said State Board of Health copies of all their reports and publications, and also such sanitary information as may be requested by said board. And said board is authorized to require reports and information (at such times and of such facts and generally of such nature and extent as its by-laws or rules may provide) from all public dispensaries, hospitals, asylums, infirmaries, prisons and schools, and from the managers, principals, and officers thereof, and from all other public institutions, their officers and managers, and from the proprietors, managers, lessees and occupants, of all places of public resort in the State; but such

reports shall only be required concerning matters or particulars in respect of which it may, in its opinion, need information for the proper discharge of its duties.

SECTION 9. Said board may, from time to time, engage suitable persons to render sanitary service or to make or supervise practical and scientific investigations and examinations requiring expert skill, and to prepare plans and reports relative thereto. But no more than two thousand dollars shall be expended in any one year for such special sanitary service.

SECTION 10. It shall be the duty of said board, on or before the first Monday of December in each year, to make a report in writing to the Governor of this State upon the sanitary condition and prospects of the State; and such report shall set forth the action of the said board and its officers and agents, and the names thereof, for the past year, and may contain other useful information pertinent to the objects for which it was created, and the better protection of life and health; and the annual report of said board shall also contain a detailed statement of the State Treasurer of all money paid out by or on account of said board, and a detailed statement of the manner of its expenditures during the year last past, but its total expenditure shall not exceed the sum of five thousand dollars in any one year.

SECTION 11. The sum of ten thousand dollars ($10,000) is hereby appropriated from the treasury for the purposes of this act and the expenditures properly incurred by the authority of said board and verified by affidavit, subject, however, to the limitations hereinbefore imposed, and shall be paid by the Treasurer upon the warrant of the Auditor General.

SECTION 12. This act shall take effect immediately, and all acts or parts of acts inconsistent herewith shall be, and are hereby, repealed.

APPROVED—June 3, 1885.

ROBERT E. PATTISON.

BY-LAWS.

The By-Laws of the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania are as follows:

Article I.

officers of the board.

Section 1. The officers of the Board shall be a president and a secretary, as directed by section 2 of the act establishing the Board.

Section 2. All elections shall be by ballot.

Article II.

duties of officers.

Section 1. The president shall preside at the meetings of the Board, preserve order, and perform such other duties as custom and parliamentary usage require. He shall be *ex officio* a member of all committees.

Section 2. The secretary shall keep the records, and conduct the correspondence of the Board. He shall be custodian of all books, documents, furniture and other property belonging to the Board. He shall give proper and timely notice, in writing, of every regular and called meeting, to each member of the Board, and shall, as executive officer, perform such other duties as are assigned by the act establishing the Board, or by these By-Laws, as the Board may from time to time direct. All communications from the secretary to the Board shall be in writing.

Article III.

meetings.

Section 1. The regular meetings of the Board shall be held on the second Wednesday in May, July and November, at Harrisburg (unless otherwise ordered). At the meeting in July the election of officers shall be held. At the meeting in November the annual report shall be adopted, and at the meeting in May a public address on some sanitary topic shall be delivered.

Section 2. Special meetings shall be called by the president, at such time and place as he shall designate, whenever requested in writing by three members of the Board, one of whom shall be the secretary.

Section 3. A majority of the members of the Board shall, at any regular, called or adjourned meeting, organize and constitute a quorum for the transaction of business.

ARTICLE IV.

ORDER OF BUSINESS.

SECTION 1. All meetings of the Board shall be called to order at the appointed hour by the president. In the event of his absence a chairman *pro tempore* shall be appointed.

SECTION 2. At regular meetings, the business shall be conducted as follows:

1. The secretary shall register the names of the members present.
2. The minutes of the last regular meeting shall be read.
3. The minutes of special meetings held since the last regular meeting may be read, if called for.
4. Report of the secretary.
5. Reports of standing committees.
6. Reports of special committees.
7. At the meeting in July, nomination and election of a president for the ensuing year.
8. Unfinished business.
9. New business.
10. Adjournment.

SECTION 3. At special meetings, the following shall be the order of business:

1. Registration of names of members present.
2. Reading of minutes.
3. Presentation of special subject.
4. Presentation of accounts.
5. Adjournment.

ARTICLE V.

REPORT OF THE SECRETARY.

The secretary shall, at the meeting in November, make a full report of his official acts, during the year ending October 1 preceding, and accompany the same with recommendation of such measures as he shall deem necessary for the preservation of the public health and the faithful execution of the law; and this report shall constitute the basis of the report of the Board to be presented to the Governor on or before the first Monday of December in each year, in accordance with the requirements of section 10 of the act constituting this Board.

ARTICLE VI.

STANDING COMMITTEES.

SECTION 1. The following standing committees shall be appointed by the president of the Board, at the meeting in November:

1. An executive committee.
2. A committee on registration and vital statistics.

3. A committee on preventable diseases, disinfectants and supervision of travel and traffic.

4. A committee on water-supply, drainage, sewerage, topography and mines.

5. A committee on public institutions and school hygiene.

6. A committee on adulterations, poisons, explosives and other special sources of danger to life and limb.

7. A committee on sanitary legislation, rules and regulations.

Section 2. Such papers, communications, or other matter received by the secretary, as he may deem proper for the purpose, he shall forward to the chairman of the appropriate committee, after filing the titles and memoranda, which shall be recorded in the secretary's office.

Section 3. All reports of committees shall be in writing.

Article VII.

finances.

Section 1. All accounts against the Board shall be filed with the secretary, and may be presented at any meeting of the Board, when they shall be acted on in open session; and all accounts allowed shall be indorsed, "Approved by order of the State Board of Health and Vital Statistics," and shall be indorsed by the president and secretary.

Section 2. The secretary shall record in a book reserved for that purpose, all accounts of expenditures ordered or made by the Board and its several members, and shall, before presenting any bill, account or voucher to the Auditor General, cause a copy of the same to be recorded, and shall have stamped upon such voucher, account or bill, the audit and date, as the executive committee shall provide.

Article VIII.

executive committee.

Section 1. The executive committee shall consist of not less than three members, including the secretary of the Board, who shall be secretary of the committee.

Section 2. It shall have the general supervision of the finances, purchases, expenses and publications of the Board.

Section 3. Its office shall be in the city of Philadelphia, until otherwise ordered.

Section 4. It shall hold meetings at least quarterly, and as much oftener as it shall deem necessary, and shall meet on the call of the chairman.

Section 5. With the approval of the Board or of the executive committee, the secretary shall make requisition upon the Secretary of Internal Affairs for such stationery, printed forms, clerical labor, apartments, and furniture as shall be needed for the use of the Board.

Section 6. No purchases shall be made or expenditure incurred except by order of the Board or of the executive committee; and the executive

committee shall not have power to incur any indebtedness beyond the amount appropriated by law.

ARTICLE IX.

RULES OF ORDER.

In conducting the business of the meetings of the Board, the parliamentary rules governing the Legislature of the State of Pennsylvania shall be adopted so far as they are applicable to its deliberations.

ARTICLE X.

SEAL.

The seal of the Board shall be circular in shape, bearing on the circumference the words, "State Board of Health. Pennsylvania. 1885. *Salus Populi Suprema Lex*," and in the center the coat of arms of the Commonwealth.

ARTICLE XI.

AMENDMENTS.

These by-laws may be altered or amended at any regular meeting of the Board by a two-thirds vote of the members present.

ADDRESS

OF THE

"State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania."

To the people of Pennsylvania:

The "State Board of Health," called into existence by the will of the people of this great Commonwealth, expressed through its representatives in General Assembly met, and approved by its chief executive, enters upon the discharge of its grave duties and the exercise of its important powers deeply impressed with the sense of the responsibilities which devolve upon it, and reverently invoking the blessing of the God of nations upon its labors. It desires at the outset so to define its position as to lead to the immediate establishment of those friendly reciprocal relations between itself and the public, which can be securely founded only upon a vigilant care for the well-being of the people by the State, on the one side, and "a decent respect for the government by the people," on the other.

It is not too much to say that the creation of this board marks a new era in the history of the State, since it indicates the recognition by our legislators of the truth, reflected from the minds of the people, once so well formulated by England's brilliant prime minister, Lord Beaconsfield, that "the health of the people is the first duty of the statesman." The "Declaration of Rights" which constitutes Article I of the Constitution of this Commonwealth, and is, therefore, a part of its organic law, proclaims that "all men have certain inherent and indefeasible rights; among which are those of enjoying and defending life and of pursuing their own happiness." It is the conviction of this Board that these necessarily include the inherent right to the enjoyment of pure air, pure water, and pure soil, since without them life can neither be enjoyed nor successfully defended, and the pursuit of happiness becomes a cruel mockery. It further conceives one of its paramount duties to be to see that no man or combination of men, however rich or powerful, shall be allowed to trespass on these rights of the humblest citizen, whether from negligence, from greed or gain, or simply from ignorance. It is no mere empty figure of speech by which we call disease a public enemy. It requires to be met with organized resistance, and this resistance must be directed by a responsible head. When pesti-

lence invades our borders, that head must be clothed with powers analogous to those of a general when the foe is at the gates. Sanitary law, in place of martial law, is then proclaimed and what are, in times of general health recognized as sacred rights of person and property are sternly set aside. When such emergencies arise, as they inevitably must at some time, and as they possibly may at no distant day, the Board confidently looks to the sound sense and self-control of the people to lead them to submit cheerfully to whatever temporary inconveniences it may be deemed necessary to impose. The abridgment of the license of the individual—nay, at times, even of his rights—for the sake of protecting the rights of the community, is the very foundation-stone of civilized life. Civil organization cannot exist without it. Hence, restrictions are placed upon certain kinds of business which threaten injury to human beings. We prohibit the merchant from exercising his right of unrestricted barter and sale and storage in the matter of explosives. He is not allowed to keep any considerable quantity of gunpowder, nitro-glycerine, or dynamite within certain limits, or within a certain distance of an inhabited house. Every one acquiesces in the justice of this restriction of his rights. But if a powder magazine had exploded in the heart of Philadelphia on the first of January, 1872, this calamity, frightful as it would have been, would not have caused a tithe as many deaths, would not have produced a hundredth part as much suffering, would not have afflicted an approach to as great a pecuniary loss, as did the epidemic of small-pox which was then raging. Thousands of lives, tens of thousands of maimed, disfigured, or invalided persons, millions of money—such was the cost of that explosion of disease. Is it too much to insist that all our citizens shall submit to that slight infringement of their personal rights, which an immense majority voluntarily undergo, in order that another such calamity shall henceforth, forever, be an impossibility within the borders of this Commonwealth?

Heretofore, it has been only a straggling, desultory warfare which has been waged against preventable disease within our borders. Isolated health boards and solitary sanitarians, here and there, have carried on a gallant fight, but against great odds, because lacking the element of intelligently combined action, which is essential to success. A prominent English medical review, speaking of our fragmentary and disjointed system of hygienic administration, if system it can possibly be called, says: "There is much good work done under a species of semi-authority and sufferance, and by volunteer exertion; but the plaint is the lack of a central authority and administrative power to make sanitary supervision an effective reality. The water-supply of a considerable portion of a great city is abominally polluted, but no sufficient authority is found to remedy it; there are numerous and deplorable nuisances, but no efficient inspectors; there are many factories and work-shops, but no laws to secure their hygienic condition or the physical well-being of those employed in them; there is evidence unmistakable of the sale of unwholesome and adulterated food, but it is nobody's

business to meddle with it and protect the public; there are on all sides complaints of building operations in defiance of sanitary laws, and no one with authority to attend to them and take action against them; and lastly, intra-mural interments stand condemned in all civilized communities, but the public authorities of the American cities have no power to stop them." It will be the business of this Board to see to it that this stigma upon our civilization is removed; to collect and coördinate these scattered forces, marshaling them into a regular army of well-drilled sanitary troops, armed and equipped with all the appliances that modern science can suggest for stamping out pestilence and conquering contagion; to strengthen feeble-health organizations, and to establish new ones where none exist, until there shall not be a hamlet in the entire domain of the State without its regularly constituted health-officers in direct communication with the central head.

Where the hygienic interests of different sections appear temporarily to conflict, the Board will use its best efforts to harmonize them. It often happens that the sanitary undertakings of one city prove the opposite of health-giving in their results in regard to another. The towns and cities which line the Schuylkill, for example, meritoriously wash themselves in that limpid stream, and so far do well, but unhappy Philadelphia, with the typhoid virus creeping through her veins, shudders as she unwillingly drinks their defiled washings. That they do this at their peril, the story of afflicted Plymouth only too clearly demonstrates, for let it not be forgotten that Philadelphia sowed the seed from which death has just reaped so fearful a harvest in that far-off mountain village. Hence, the necessity for the consideration on the part of the central sanitary authorities of the difficult problem afforded by "the pollution of rivers," in a broad, generous spirit, with a view to determining methods whereby one community may improve its own health conditions without impairing those of a neighbor.

In an immense territory like our own, larger than that of most of the nations of Europe, with its great diversity of surface, its lofty mountain ranges, and its immense forests, wonderful opportunities exist for sanitary engineering on an immense scale, determining in what direction water-sheds shall be encouraged and in what diverted; to what extent private corporations are to be allowed to jeopardize the health of large sections of the country by obstructing natural water-courses, for the purposes of manufacture or navigation; deciding how far certain forests act as natural barricades against devastating winds, and should, therefore, be left untouched by the axe in order to maintain a permanent average rainfall, and thus avert droughts, cyclones, and floods, and how far others interfere with the circulation of healthful breezes, and may, therefore, be with benefit removed.

With a rapidly growing population, and the frequent development of new centers of wealth and industry, much effective sanitation for the future can be accomplished in supervising the laying out of new towns. No village must be allowed, from this time forth, to take the simplest corporate form without laying before this Board a carefully prepared plan of its

sanitary provisions. Inquiry will be made into the character of the soil, the quantity and quality of the possible water-supply, the width and inclination of its streets, whether its projected system of sewerage is wise and scientific, whether its surface drainage takes advantage of the natural water-courses, its regulations in regard to habitations, the space of ground allowed to each, and the space required in each in relation to the number of occupants. All these are points which enlightened sanitary science demands should be arranged, with a wise prescience in advance, and not left to settle themselves hap-hazard as emergencies may arise, after fearful sacrifices of health and life, and at an immense outlay of money, as our older cities are finding out to their cost.

The Board must also consider the relations of the country to the city as a purveyor. The supply of fresh vegetables and fruits, and pure milk and other dairy products to large communities is of the utmost importance, and every effort will be made to require and secure it. The transportation of live stock for food needs to be very carefully watched and regulated, both that none but healthy, and, therefore, wholesome, meat may be exposed for sale, and that infectious and epidemic diseases may not be introduced among our native herds and flocks from other localities; and although this subject has not been neglected by a coördinate branch of governmental supervision, the Board feels assured that any assistance which it may render in so important a matter will not be considered as impertinent.

But to attempt to briefly indicate even all the directions in which this organization hopes to add to the welfare and prosperity of the State would be to write a volume instead of carrying out its intention simply to speak a word. The intimate connection between a high standard of public health and material prosperity cannot be gainsaid. A human life has an actual cash value to the community as certainly as that of a horse or a cow. Fifteen million dollars would not cover the loss to this State from preventable disease in a single year. Hence, the money spent in sanitary precautions and improvements is repaid with compound interest in the longevity and productive capacity of the population. Its disbursement is economy of the wisest kind, worthy of the most sagacious statesman.

But while it is true that the subjects confided to the consideration of this Board involve the profoundest problems of political economy and the most intimate researches of scientific investigation, it is not less true that every home and every hearth in the Commonwealth is deeply interested in the practical results to which it shall attain. Every vacant chair by the fireside, every empty place at the table, whose beloved occupant was snatched away by the ruthless hand of contagious or preventable disease, is a mute appeal for more searching inquiry into the causes and means of prevention of such diseases by the health authorities, and more general interest in their labors, and readier acquiescence in their decisions by the community at large and its individual members. The Board, therefore, earnestly invoke the conscientious coöperation of every householder to the

extent of keeping his own home, and other buildings of which he may have supervision, in a healthful condition.

Especially does it desire that the women of the State should take an active and intelligent interest in the practical solution of the problems of home hygiene and sanitation. The establishment of the first State Board of Health in the United States was effected by the efforts of women. Reference is made to that Board, whose work has been so effective and thorough that it has been looked to as a model by other similar organizations—that of Massachusetts,—now in the sixteenth year of its existence. The ancients were right in making the divinity of health a goddess rather than a god, for woman, as wife, mother, nurse, has for her special function that daily ministry to the bodily welfare and daily necessities of offspring and of husband, that constant presence in and care of the home which are such essential promoters of health in the individual, in the family, and in the community. The Board is especially urgent, then, that the mothers of the land should attentively study the leaflets and tracts which it will from time to time issue, giving plain, practical advice as to the best methods of preventing the spread of infectious diseases, and of making their homes the abodes of health and therefore of happiness.

The Board proposes to indulge in no display of sanitary pyrotechnics in order to dazzle the public and create for itself a factitious importance, but rather, by quiet, steady, carefully-considered work, to organize sanitary effort, to acquaint itself with the health conditions of every quarter of the State, and to diffuse information which shall develop an enlightened public sentiment in regard to both rights and duties from a sanitarian stand-point. Especially will it recognize the necessity for moving with caution where the interests of trade, manufacture, or commerce apparently conflict with those of public health, aiming always to protect the latter with the least possible interference with the successful promotion of the former.

But, on the other hand, if the Legislature of this Commonwealth, acting with its usual wise conservatism, has been slow in establishing this safeguard to the lives and health of the people, the latter may congratulate themselves that a much stronger law has now been enacted than could possibly have been passed when the first application for such legislation was made. Instead of being only a statistical and advisory body, as must then have been created, the present Board has been endowed with ample powers to enforce its regulations for the protection of the public, and this grant imposes a responsibility which the Board recognizes and will not hesitate to assume if occasion demand.

The Board cannot find more fitting language in which to conclude this address than that employed in a recent admirable circular issued by the board of health of the city of Philadelphia "for the guidance of citizens in the management of their dwellings and for personal application." It is as follows: "While the health of the community depends in great degree upon a rigid observance by officials of all the laws of public hygiene, it is no

less dependent upon the faithful application of the principals of hygiene on the part of individuals. To accomplish the best results, the earnest and cheerful coöperation of the people with the health authorities in all matters pertaining to the general health is absolutely indispensable."

ED. WM. GERMER, M. D., *President.*
PEMBERTON DUDLEY, M. D.
J. F. EDWARDS, M. D.
RUDOLPH HERING, C. E.
J. H. McCLELLAND, M. D.
BENJAMIN LEE, M. D., *Secretary.*

OFFICE OF THE
SECRETARY OF THE COMMONWEALTH,
HARRISBURG, *July 3, A. D. 1885.*

RECORD OF ORGANIZATION AND ABSTRACT OF MINUTES OF THE BOARD.

Pursuant to a summons from the Honorable the Secretary of the Commonwealth, the following-named members of the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania, established by act of Assembly approved by His Excellency, the Governor, June 3, 1885, met in the office of the Secretary of the Commonwealth on Thursday, July 2, 1885, at 12.30 o'clock, as required by section 2 of the act, viz: Dr. Pemberton Dudley, of Philadelphia; Dr. Edward William Germer, of Erie; Dr. J. M. McClelland, of Pittsburgh; Mr. Rudolph Hering, of Philadelphia; Dr. Benjamin Lee, of Philadelphia, and Dr. J. F. Edwards, of Philadelphia.

The oath of office, required by section 1, article VII, of the Constitution of the Commonwealth, was administered by the Honorable the Secretary of the Commonwealth, and under his supervision the members proceeded to draw lots for their respective terms of service, with the following result: Dr. Edward William Germer, six years; Dr. Pemberton Dudley, six years; Dr. J. F. Edwards, four years; Dr. Benjamin Lee, four years; Mr. Rudolph Hering, two years; Dr. J. H. McClelland, two years.

The Board then proceeded to organize by the election of Dr. Pemberton Dudley as temporary chairman, and Dr. J. F. Edwards as temporary secretary.

The Chair announced the first business in order to be the election of a president, in accordance with section 2 of the act.

On motion, it was resolved that the election be by ballot. The Chair appointed Dr. McClelland as teller.

Dr. Edward William Germer, of Erie, was declared unanimously elected.

The appointment of a secretary was next in order, and Dr. Benjamin Lee, of Philadelphia, was unanimously elected to fill this position.

On motion of Dr. Dudley, the President having taken the chair, it was

Resolved, That the temporary secretary be instructed to at once notify His Excellency, the Governor, that the Board has organized by electing Dr. Edward William Germer, of Erie, to be president, and appointing Dr. Benjamin Lee, of Philadelphia, as its secretary, and that it is ready to receive communications from him on any subject pertaining to the protection of life and health, or other matter within the range of the duties by law assigned to it.

Resolved, That the temporary secretary likewise notify His Excellency that, in consequence of the election of Dr. Benjamin Lee, of Philadelphia, a member of the Board, to the position of Secretary, a vacancy now exists upon the Board, which it will be the duty of His Excellency to fill.

At the request of the temporary secretary, Dr. McClelland was instructed to act with him as a committee to carry out the foregoing resolutions.

The committee having reported that they had accomplished the duty prescribed, and conveyed the assurance of His Excellency's interest in the objects of the Board and his earnest wishes for its successful administration, the Board adjourned to meet in the same room at 2, P. M.

MINUTES OF SECOND SESSION.

Pursuant to adjournment, the Board met at 2, P. M., in the office of the Secretary of the Commonwealth. All the members present, Dr. Germe ', the President, in the chair.

Dr. McClelland moved that a committee be appointed to draft by-laws for the government of the Board, and report at a special meeting to be held for the purpose of considering such by-laws.

The Secretary stated that, in order, if possible, to avoid the necessity for a special meeting at an early date, he had taken the liberty of drafting a set of by-laws, founded on those of the most successful Boards in other States, and if it pleased the Board, he would submit them. Permission was accorded, and, on motion, the law establishing the Board was declared to be the Constitution of the Board, and the Secretary was instructed, in having the by-laws printed, to preface them with a certified copy of the act, as such constitution.

The by-laws were then read, and, on motion, considered *seriatim*, amended and finally adopted as a whole, as the by-laws of Board. On motion, the Board then adjourned to meet in the same place at 8, P. M.

MINUTES OF THIRD SESSION.

Pursuant to adjournment, the Board met at 8, P. M., in the office of the Secretary of the Commonwealth. The President in the chair, all the members present.

On motion of Dr. Dudley, the Secretary was instructed to obtain the opinion of the Attorney General of the State as to whether Section 27, article III, of the Constitution is in any way prohibitory of the right of this Board to order inspections of food, drugs, etc.

Dr. Dudley then moved that the Secretary be authorized to purchase such scientific and other works, and subscribe to such periodicals as in his judgment, the Board may need for the use of its members in the discharge of their duties. Carried.

The Secretary announced a donation of an entire set of annual reports from the State Board of Health of New York, for which he was ordered to return the thanks of the Board. The Secretary then offered the following resolutions, which were carried, viz:

Resolved, That the Committee on Sanitary Legislation, Rules and Regu-

lations be, and is hereby, directed to report, at its convenience, upon the laws of the Commonwealth so far as they affect the necessary action of the Board, and also to prepare and print such portion of the existing laws as may, in its judgment, be useful to the public and to this Board.

Resolved, That Committee on Epidemic, Endemic, and Contagious Diseases be, and is hereby, directed to prepare, and, with the approval of the Executive Committee, to publish and circulate a brief circular upon the subject of epidemic cholera, containing plain, practical instructions as to the most important measures to be adopted and rules to be observed, both by local boards of health and by private citizens, to prevent the invasion and spread of that disease.

Resolved, That the Secretary be authorized to request Dr. L. H. Taylor, of Wilkes-Barre, to prepare, for the use of the Board, a complete history of the existing epidemic of typhoid fever at the town of Plymouth, Luzerne county, with accurate maps, showing the various sources of water-supply, and their relations to the spread of the disease.

Also, to request Dr. E. O. Shakespeare, of Philadelphia, to furnish, for the use of the Board, full and complete records of the autopsies made by him at Plymouth, in order to determine the precise nature of the epidemic.

Also, to request Dr. Morris Stroud French, of Philadelphia, to prepare a brief history of the establishment of the temporary fever hospital at Plymouth, under the auspices of the Citizens' Relief Committee of Philadelphia.

Also, to request Dr. Morris Stroud French, of Philadelphia, to prepare a statement of the expenses incurred in the treatment of the sick, whether in their homes or in hospital, in providing food and other necessaries for the destitute, and in disinfection; and an estimate of the financial loss to the community and State from the epidemic.

Resolved, That the Executive Committee be authorized to use its discretion as to the amount of compensation to be allowed for each of the above-named reports.

Resolved, That the Committee on Sanitary Legislation, Rules, and Regulations, be, and is hereby, directed to prepare, and, with the approval of the Executive Committee, to circulate a simple plan for the organization of local boards of health.

Resolved, That the Executive Committee be, and is hereby, authorized to communicate with the Honorables, the Secretary of Internal Affairs, the Treasurer, and the Auditor General of the Commonwealth, in regard to the proper forms to be observed in obtaining, for the use of the Board in meeting its current expenses, the moneys appropriated for this purpose in section 2, of the act establishing the Board.

Resolved, That the Committee on Registration and Vital Statistics be, and is hereby, directed to prepare the necessary methods and forms for obtaining and preserving records of births, marriages and deaths, of preva-

lent diseases, and of practitioners of medicine and surgery, in accordance with the requirements of section 7 of the law establishing this Board.

Resolved, That the Secretary be, and is hereby, instructed to inform all local boards of health in the State of the organization of this Board, and of the time and place of its regular meetings, to call attention to the provisions of the law, and to request copies of their reports and publications, in conformity with the requirements of section 8 of the law.

Resolved, That the State Board of Health desires to express its hearty approbation of the energetic measures now being carried out by the Boards of Health of the cities of Philadelphia, Pittsburgh and Erie, in order to avert the threatened invasion of cholera during the present summer.

Resolved, That in house to house inspection, faithfully and fearlessly performed, it recognizes the only reliable means for discovering the actual sanitary condition of a city; and that the appointment in Philadelphia of an officer, who shall devote his entire time to the work of disinfecting such premises as are reported by the inspectors to be a source of danger to the public health, affords reasonable ground for the hope that, with proper pecuniary support from councils, these efforts will be crowned with success.

Resolved, That the State Board of Health regrets the suspension of the order of Board of Health of Philadelphia directing the disuse and filling up of wells for drinking purposes in built-up parts of the city, believing that all such wells, if not already polluted, must shortly become so, thus constituting a constant source and menace of disease.

Resolved, That the State Board of Health pledges to the boards of health or health commissioners of Philadelphia, Pittsburgh and Erie its hearty cooperation in all measures designed to avert pestilence from and maintain a high standard of public health in the ports of the Commonwealth, and will unhesitatingly use for this purpose whatever powers the Legislature may have conferred upon it, and will also avail itself of such advantages as may accrue from its relations to the National Board of Health and to the boards of health of neighboring States, to the same end.

Resolved, That in view of the lateness of the season, and the threatening character of the news from Europe in regard to the progress of Asiatic cholera, the boards of health of the cities referred to be notified to send at once to the Secretary of this Board copies of their regular reports, together with such other information as, in their judgment, it may be important that this Board should be in possession of, without waiting for the preparation of blanks by this Board.

Resolved, That the Secretary be, and is hereby, instructed to notify His Excellency, the President of the United States, the Secretary of the National Board of Health, and the secretaries of all State boards of health now existing, or which shall hereafter be created, of the establishment of this Board, and of its readiness to coöperate with them in the work of protecting the health of the entire Nation.

Resolved, That the Secretary be instructed to communicate with the sec-

retaries of the State boards of health of all contiguous States with reference to devising a plan of inter-State supervision of travel and traffic, in order to prevent the importation of infected goods or persons from one State into another.

Resolved, That the Secretary, acting in connection with the Committee on Travel and Traffic, be instructed to address a circular to the presidents of all railroad companies running lines on the territory of this State, urging them to adopt rules for the conduct of their employés in the event of the discovery of infected persons or goods on their trains, and also to determine upon refuges, at safe distances from centers of population, to which such persons may be transferred for medical care and isolation and such goods for disinfection, and calling for reports from such railroad officials as to the plans adopted by them in accordance with these suggestions, as well as in regard to the means taken by them for keeping their premises and lines of travel in good sanitary condition.

Resolved, That no papers shall be published in the annual report of this Board except such as are approved for purposes of such publication by a majority of the members of the Board, and that any such papers shall be published over the signature of the writer, who shall be considered as entitled to the credit of its production, as well as responsible for the statement of facts reported and opinions expressed therein.

On motion, the Board then adjourned to meet at 9, A. M., the day following, July 3, in the same place.

Minutes of Fourth Session.

Pursuant to adjournment, the Board met at 9, A. M., July 3, in the office of the Secretary of the Commonwealth, the President, Dr. Germer, in the chair. Present, Doctors Germer, Dudley, Lee, and Mr. Hering.

On motion, the reading of the minutes was dispensed with.

The Secretary then read an "Address of the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania to the people of Pennsylvania," which, with some modifications, was, on motion, adopted.

On motion of Dr. Dudley, the Secretary was authorized to have as many copies of the address printed as in his judgement was necessary to secure the objects of the address in giving information to the people of the existence and objects of the Board.

Dr. Dudley moved that the Secretary be authorized to transmit copies of the address to all mayors of cities, burgesses of boroughs, and supervisors of townships, and to the newspapers of the State.

It was carried.

Also, that the Secretary be, and is hereby, instructed to issue a postal card or circular to all physicians in the Commonwealth, notifying them of the establishment of the Board, and inviting their friendly and active cooperation in the work of organizing sanitary effort, and procuring sanitary statistics throughout the State.

It was carried.

Also, that the Secretary be requested to furnish each member of the Board with complete lists of the standing committees, and the members composing each.

It was carried.

Also, that the Committee on Epidemics and Contagious and Infectious Diseases be authorized to confer with the State Board of Agriculture in reference to the subject of the prevention and control of contagious and infectious diseases in domestic animals, and to report at the next regular meeting.

It was carried.

A short recess was then taken, and the Board re-assembled at the Lochiel Hotel.

On motion of Dr. Dudley, that portion of the by-laws which referred to the appointment of standing committees, viz: Article VII, section 1, was reconsidered, and a re-arrangement of the original committees was agreed upon, by which their number was reduced from ten to eight, as already reported in the minutes. This necessitated a change in the chairmanships of certain committees, so that by the new arrangement the committees stand as follows:

1. *Executive Committee.*—Chairman, Pemberton Dudley, M. D., Rudolph Hering, C. E., J. F. Edwards, M. D., Secretary, Benjamin Lee, M. D.

2. *Committee on Registration and Vital Statistics.*—Chairman, Benjamin Lee, M. D., Edward William Germer, M. D., J. F. Edwards, M. D.

3. *Committee on Preventable Diseases and Supervision of Travel and Traffic.*—Chairman, J. F. Edwards, M. D., Pemberton Dudley, M. D., Benjamin Lee, M. D.

4. *Committee on Water-Supply, Drainage, Sewerage, Topography and Mines.*—Chairman, Rudolph Hering, C. E., J. H. McClelland, M. D.

5. *Committee on Public Institutions and Places, and School Hygiene.*—Chairman, J. H. McClelland, M. D., Rudolph Hering, C. E.

6. *Committee on Adulterations of Foods, Beverages and Drugs.*

7. *Committee on Explosives, Poisons and other Special Sources of Danger to Life and Limb.*—Chairman, Pemberton Dudley, M. D.

8. *Committee on Sanitary Legislation, Rules and Regulations.*—Chairman, Pemberton Dudley, M. D.

On motion, the Board then adjourned *sine die.*

A special meeting of the Board was held on Wednesday, October 21, at 12, M., at the executive office, on the call of the President; Dr. David Engelman in the chair. Present, Dr. Pemberton Dudley, Dr. David Engelman, Dr. Benjamin Lee, and by proxy, Mr. Rudolph Hering. The reading of the minutes was, on motion, dispensed with. The Secretary stated the object of the meeting to be the consideration of the general subject of the powers of the Board as regarded the abatement of particular nuisances. The question was now a pressing one, since complaints of a very serious nature had

been made to the Secretary of nuisances existing in the immediate vicinity of Philadelphia, imperiling the health of not only the inhabitants of the villages in which these nuisances existed, but of the entire city. Three cases were instanced; that of Spring Mill, Montgomery county, where small-pox had been introduced by infected rags at a paper mill; that of Rosemont, where typhoidal and malarial fevers of obscure type had been caused by filthy hog-pens, and cow yards, and defective drainage; and that of Fernwood, Delaware County, where Typhoid Fever had been caused by neglected drainage. In the case at Rosemont, the Secretary, as executive officer of the Board, had twice given the offender formal notice, and personally extorted from him a promise to abate the nuisance, but neither warning nor promise had been respected. It had, therefore, become necessary for the Board to act, if it wished to preserve its self-respect, and the respect of the community. The Secretary had obtained a formal opinion from an Attorney on the powers of the Board, and also an expression of opinion from Attorney Bickel, district attorney for Montgomery county, in which the nuisance referred to existed, both of which were read to the Board.

That of Attorney Bickel contained a recommendation that the Board adopt a regulation similar to the following:

REGULATION.

Whenever a complaint is made in writing to the Secretary of the Board of the existence of a nuisance, he shall forthwith, as executive officer of the Board, investigate the matter, and shall determine whether the alleged nuisance is detrimental to the public health or the cause of any especial disease or mortality; and, in case he shall so find, then he shall notify the owner, agent, or occupier of said premises in writing of such finding, and the executive officer shall, thereupon, order and direct the abatement and removal of the same within ——— days; and in the event of the failure of said owner, agent, or occupier of said property to abate and remove the nuisance, then the executive officer shall proceed to abate and remove the same, and shall employ all the force necessary to do so, and shall proceed by warrant, arrest, and indictment to convict the party failing to obey said order of abatement and removal.

On motion, the regulation, as read, was adopted as a regulation of the Board to be entitled, "Regulation No. 1, on Abatement of Nuisances," and the Secretary was instructed to proceed, with such dispatch as in his discretion was warranted, to remove and abate the said nuisances.

On motion, the Secretary was authorized to fill the blank number of days in the regulation as in his judgment the conditions of removal and the requirements of the public health might require in each instance.

On motion of Dr. Dudley, he was instructed to obtain the opinion of the Attorney General as to whether the courts would probably sustain him in the removal and abatement of nuisances in accordance with the regulation as adopted.

On motion, the Board then adjourned.

MINUTES OF SECOND REGULAR MEETING.

First Session.

The Board met in the Supreme Court room in the capitol at Harrisburg on Wednesday, November 11, at 12, M., the President in the chair.

Present, the President, Dr. Germer, Dr. Dudley, Mr. Hering, Dr. Engelman, and Dr. Lee.

The minutes of the last regular meeting were read and approved.

The minutes of a special meeting held in Philadelphia, October 21, were read and approved.

The Secretary then read his annual report, which was received, and, on motion of Dr. Dudley, was ordered to be included in the annual report of the Board to the Governor.

On motion of Dr. Dudley, it was ordered that the substance of the minutes, as read, be also incorporated in the annual report.

On motion, the Board then adjourned to meet at 2.30, P. M.

Second Session.

Pursuant to adjournment, the Board met at 2.30, P. M., the President in the chair.

Present, Dr. Germer, Dr. Dudley, Mr. Hering, Dr. McClelland, Dr. Engelman, and Dr. Lee.

The Secretary reported that, in obedience to the instructions of the Executive Committee, he had given an order for the execution of the seal of the Board to the Harrisburg Stencil Works, by whom a seal and press had been furnished at an expense of thirty dollars. Copies of the seal were presented for inspection. A slight variation had been made from the design prescribed in the by-law, in order to give greater prominence and distinctness to the motto, *Salus populi suprema lex*, which had been placed on the face of the seal above and below the State arms, instead of on the circumference. The seal, as presented, was approved.

The Secretary then presented the report of Dr. Lewis H. Taylor, of Wilkes-Barre, prepared in accordance with a resolution of the Board, giving a complete history of the epidemic of typhoid fever at Plymouth, Luzerne county, during the spring and summer of the present year.

On motion, portions of it were read by the Secretary, and it was referred to the Executive Committee for publication, after condensation by the Secretary, if he deemed it necessary.

Dr. Dudley then presented a report on the sanitary condition of the house and neighborhood in Philadelphia where the individual had lodged and boarded who had been supposed to have originated the Plymouth epidemic.

On motion of Dr. McClelland, it was accepted and referred for publication.

The Secretary then presented the report of Dr. Morris Stroud French, of Philadelphia, who was one of the physicians sent to Plymouth by the Citizens' Relief Committee of Philadelphia, on the financial aspect of the epidemic. This report had been also prepared in accordance with a request from the Board, and a large number of the local relief committee of Plymouth had been engaged to make a house-to-house visitation in order to get exact facts and figures. It contained the names of every individual attacked with the disease, and would be a very valuable addition to the literature of typhoid epidemics.

It was, on motion, adopted and referred for publication.

The Secretary stated that Dr. Shakespeare, to whom he had applied, as instructed by the Board, for a report on the pathological appearances revealed in his autopsies of patients who had died during the Plymouth epidemic, had been sent abroad by the President of the United States on a sanitary mission of much importance before he had finished the desired report, but had promised to finish it while crossing the Atlantic and transmit it in time for the annual report.

The Secretary was authorized to incorporate Dr. Shakespeare's report in the annual report when received.

The Secretary then stated that, soon after entering upon his duties, complaints were made to him of nuisances existing in the districts contiguous to the city of Philadelphia, but out of reach of the jurisdiction of the Board of Health of Philadelphia, one of these being nothing less than an outbreak of small-pox, originating from infected rags at a paper-mill. He proposed, both in writing and personally appearing before the city board, to enter into an arrangement by which, in such cases, he could have an expert inspector placed at the disposal of the State Board for the emergency, the State Board to bear the expense of the inspection. The matter was referred to the sanitary committee of the city board, who decided that there were legal and technical obstacles to such arrangement which could not be gotten over. At the same time, they most courteously undertook the work of inspection in several instances until the State Board could make its own arrangements for the inspection and abatement of nuisances. Feeling that the State Board could not continue to accept gratuitous services in this way, the Secretary had assumed the responsibility of appointing Dr. William B. Atkinson, of Philadelphia, as special medical inspector for the district including all the counties immediately adjacent to the city of Philadelphia, viz: Delaware, Chester, Montgomery, and Bucks, and requested the Board to confirm the appointment.

On motion, Dr. William B. Atkinson, of Philadelphia, was appointed special medical inspector for said district, it being understood that there was to be no salary attached to this or any similar inspectorship, but that each inspection would be properly compensated at the discretion of the Secretary.

The Secretary then presented a report of an inspection of the United

States Marine Hospital Service quarantine station at Lewes, at the mouth of the Delaware bay, made in company with a delegation of the Philadelphia Board of Health, and Dr. Marshall, a member of the Delaware State Board of Health. Dr. Hunt, the secretary of the New Jersey State Board of Health, had also promised to take part in the inspection, but was prevented by a sudden outbreak of typhoid fever in that State. On motion, the report was accepted and referred for publication.

The President then presented a number of circulars from the Treasury Department of the United States, addressed to him as health officer of the port of Erie, on the subject of Lake Quarantine, etc. They were referred to the Committee on Travel and Traffic.

The Secretary presented a report on the occurrence of cases of typhoid and malarial fevers at Rosemont, Montgomery county, attributed to bad drainage and filthy pig-styes, etc., detailing the steps which he had taken for the abatement of the alleged nuisances, involving much correspondence with legal officers of the State and county, in order to determine the exact powers of the Board in such cases, and the most expeditious and certain mode of procedure for the removal and abatement of nuisances in general. The report was accepted, and referred as in previous instances.

A similar report was presented by the Secretary on cases of typhoid fever occurring at West Fernwood, Delaware county, attributable to defective drainage. In this case, as in the previous one, inspections had been made by Dr. J. Howard Taylor, medical inspector of the Philadelphia board, by Disinfector Kennedy of the same board, by Special Medical Inspector Atkinson and by the Secretary himself. The report was accepted and referred.

Mr. Hering as chairman of the Committee on Water-Supply, Drainage, etc., read a report of an inspection made by himself, Dr. McClelland and Dr. Lee, of certain nuisances existing in townships immediately contiguous to Allegheny City, but outside of the jurisdiction of the board of health of that city, with recommendations for an improved system of sewerage; also, of an inspection of the Allegheny river as a source of water-supply for that city, with recommodations. The report was accepted and referred.

Dr. McClelland reported, in reference to the subject of the report just read, that the system of sewerage for Butcher's Run, recommended in the committee's report, had already been adopted by the councils of Allegheny, and that the nuisances on Spring Garden Run had been abated by the county courts.

The Secretary read a communication from the clerk of Allegheny City, stating that a survey of the Allegheny river had been commenced, in accordance with the suggestion of the committee.

A telegram was read from Dr. Edwards stating that he would be present at the evening session.

The Secretary stated that it was made evident by the inspection at Allegheny City that one of the most pressing duties of the Board was the

adoption of regulations by which the proprietors of slaughter-houses, bone-boiling establishments, soap factories, and other similar industries outside of city limits, could be compelled to conduct their business in such a way as not to create or maintain nuisances prejudicial to the public health. He had, therefore, drawn up a set of regulations for this purpose, which he submitted for the consideration of the Board.

Dr. McClelland, while expressing his approval of the general tenor and object of the regulations, thought that they might be open to objection as affixing definite penalties to certain offenses, which the law creating the Board did not, in so many precise words, authorize.

The Secretary explained that, in his view, this was merely an expression of the judgment of the Board as to what the appropriate penalty would be, and not intended at all to overrule the discretionary power conferred upon the judge by the law.

On motion of Dr. McClelland, the regulations were adopted, with the exception of the clauses affixing penalties, and the Secretary was instructed to obtain an expression of opinion from the Attorney General of the State as to the propriety of retaining such clauses, and not to circulate the regulations, as they stand, unless an affirmative decision had been rendered.

Dr. Dudley then made a report on the inspection of Camp Muhlenberg, near Media, Chester county, General Snowden commanding First Brigade, Pennsylvania State National Guard. The inspection was made in the company of the Secretary, and the report was highly commendatory of the sanitary condition and police of the camp.

The report was accepted and referred.

The President then presented a report of an inspection of Camp Gallagher, at Conneaut Lake, Major General Beaver, commanding Second Brigade, Pennsylvania State National Guard. The location of the camp was good, and general sanitary precautions excellent, but considerable sickness was caused by the want of proper meat inspection, leading to the use of tainted beef.

The report was accepted and referred.

The subject of precautions to be adopted against small-pox being next in order, the President reported that since the commencement of the present epidemic in Canada, he had caused two thousand vaccinations to be made in the city of Erie.

The Secretary then read a circular, which he submitted for the approval and adoption of the Board, entitled "Precautions against Small-pox."

On motion of Dr. McClelland, the circular was approved and referred for publication in the report, and it was also

Resolved, That the Secretary be instructed to send a copy of the same to every physician, clergyman, board of health, health officer, and school superintendent and principal throughout the State, certain alterations and amendments being first made.

On motion of Mr. Hering, the Secretary was instructed to inspect, or

cause to be inspected, the various vaccine farms in this State or elsewhere, in this country and report at his convenience.

The Secretary then presented an elaborate report of the sanitary committee of the Board of Health of the city of Philadelphia, made in response to a letter of inquiry addressed by him to the board, on the "provisions made for the disinfection of infected clothing, bedding, etc.," in that city, accompanied by illustrative cuts.

The report was accepted and ordered to be printed in full.

On motion of the Secretary, it was

Resolved, That the State Board of Health earnestly recommend to the councils of the city of Philadelphia the establishment, in other parts of the city, of disinfecting stations similar to that connected with the Municipal hospital.

Resolved, That the thanks of the Board are hereby tendered to the sanitary committee of the Board of Health of the city of Philadelphia, and to its chairman, Dr. Ford, for the free and satisfactory replies made to the inquiries of the Board, and for the valuable information afforded.

Resolved, That the municipal disinfecting station of Philadelphia is recommended as a model to the councils of all cities in this State, and that the State Board of Health urge upon said authorities the importance of making similar provision for the treatment of infected material during the present winter, in view of the possible invasion of Asiatic cholera with the advent of warm weather, as well as of the present existence of an alarming epidemic of small-pox in a neighboring country.

The Board then, on motion, adjourned to meet at 7.30, P. M.

THIRD SESSION.

Pursuant to adjournment, the Board re-assembled at 7.30 P. M., at the same place. The President in the chair.

Present, Dr. Dudley, Dr. Germer, Mr. Hering, Drs. Lee, Engelman, McClelland, and Edwards, constituting the entire Board.

The Secretary reported having made a brief inspection of the new drainage system of the State Lunatic Hospital at Norristown, which had been resorted to in consequence of the previous system having resulted in the contamination of a stream running through the borough of Norristown.

On motion, the subject was referred to the Committee on Water-Supply, Drainage, &c., for consideration, observation and subsequent report.

The Secretary then presented a report on the sanitary condition of Towanda, Bradford county, signed by all the most prominent physicians of the place, and requesting advice in regard to the proper means of remedying serious defects of drainage.

The report was accepted and referred for publication.

On motion of Dr. Dudley, the Secretary was authorized to appoint a special medical inspector for a district of which Bradford county should be the center.

A report on the sanitary condition of Millerstown, accompanied by a similar petition, was read by the Secretary, accepted and referred for publication.

On motion of Dr. Dudley, the Secretary was instructed to communicate with the authorities of Millerstown, insisting on the adoption of certain sanitary reforms.

A similar report from Warrior Run was read, and a similar resolution adopted.

A report from Dr. Lewis H. Taylor, of Wilkes-Barre, on the sanitary condition of Sugar Notch, Luzerne county, was then read by the Secretary. As showing what could be done by an intelligent and energetic borough council in stamping out a threatening epidemic of typhoid fever, this report was in striking contrast to the majority of those received, and is earnestly commended to the consideration and imitation of all borough authorities. Accompanying this report, was a valuable history of the epidemic, contributed to a local paper by Dr. Davis, of Wilkes-Barre. This was, on motion, adopted as a part of the report, and the whole was then accepted and referred for publication.

The next business in order was the consideration of the subject of "Infected Rags." The Secretary gave a brief history of the cargo of the bark *Lucy A. Nickels.* Having received private intelligence that this cargo of five thousand bales of rags from Japan, which the port physician of New York had decided against admitting to that port without disinfection, were to be brought to Philadelphia, he considered it his duty to notify the health officer of Philadelphia of the fact, and to ask to be allowed to appear before the city board of health and present his protest against their being passed. This was courteously granted, but the Board nevertheless permitted the rags to be landed in bale and placed in a bonded warehouse. It was for this Board to decide whether it was necessary to take any action in the premises. Much discussion followed, and the President, calling Dr. Engelman to the chair, gave his experience as to the dangerous character of infected rags as disease carriers.

On motion of Dr. McClelland, it was then

Resolved, That the executive officer be instructed to forbid the removal of the Japanese rags constituting the whole, or a part, of the cargo of the bark, *Lucy A. Nickels*, from Philadelphia into the rural districts, until they have been disinfected in a manner entirely satisfactory to the Board of Health of Philadelphia.

In this connection, the Secretary stated that, just before leaving the city to attend this meeting, he had been waited on by a gentleman, who claimed to have discovered a method of disinfection by chlorine, of much superior effectiveness to any process at present in use. Other chemists and manufacturers had also called his attention to proprietary disinfectants, requesting a competitive trial of their products. It was a subject to which the Board might appropriately turn its attention.

Dr. McClelland moved that the whole subject of disinfection and the comparative value of various disinfectants be referred to the Committee on Preventable Diseases.

It was carried.

The Secretary then presented the following communications, viz:

From Prof. George G. Groff, of Lewisburg, offering to dispose of a large collection of health charts, etc., to the Board. The Secretary was instructed to examine said charts, etc., and purchase such as appeared available for distribution.

From a large number of clerks of orphans' courts and prothonotaries throughout the State, to whom application had been made for returns of registration of marriages, and of practitioners of medicine and surgery, inquiring to whom they were to look for compensation for the service required.

Dr. McClelland moved that it was the sense of this Board that the said county officers should apply to the county commissioners of their respective counties, for compensation.

It was carried.

From the United States signal officer at Philadelphia, in reply to a request from the Secretary that he would furnish meteorological data for the annual report of the Board, giving the names of a large number of private observers throughout the State.

Mr. Hering suggested that the water department of Philadelphia was in possession of full data of this nature for eastern Pennsylvania, and he had no doubt would cheerfully furnish them to the Board.

The Secretary was authorized to make application to the chief of the water department of Philadelphia for meteorological data in the section referred to.

From Mr. R. K. Buehrle, city superintendent of public schools of Lancaster, calling attention to the fact that it is not an unusual thing for consumptives to be teachers in public schools, and suggesting the risk of infection to the pupils.

On motion of Dr. Dudley, the communication was referred for publication, and also referred to the Committee on School Hygiene for consideration.

Reports of committees being now in order, Dr. Dudley, chairman, presented the report of the Executive Committee, which was accepted, and referred for publication.

On motion, the Board then adjourned to meet at the same place, at 10, A. M., November 12.

FOURTH SESSION.

Pursuant to adjournment, the Board re-assembled at 10, A. M., Thursday, November 12. All the members present. President Germer presiding.

Reading of minutes was, on motion, dispensed with.

The first business in order was the report of the Committee on Registration and Vital Statistics.

Dr. Benjamin Lee, the chairman, presented for the appoval of the Board a blank form of Registration of Marriages for the use of clerks of orphans' courts in making their returns to the Board, which, after discussion as to whether provision should not be made in it for the registration of marriages between parties of different colors, was approved and ordered to be printed and distributed to the appropriate officers.

The Secretary was also authorized to prepare blanks upon the same general plan, having the Medical Registration law and the portion of the act creating the State Board of Health bearing upon the subject, conspicuously printed upon a cover to be attached to the same, for the registration of practitioners of medicine and surgery, and to have the same printed and to distribute them to the appropriate county officers.

On behalf of the Committee on Preventable Diseases and the Supervision of Travel and Traffic, whose report was next in order, Dr. J. F. Edwards, chairman, reported that, in accordance with a resolution of the Board, he had, in connection with the Secretary, prepared a circular containing "Precautions against Cholera," which was presented for the consideration of the Board.

On motion, the circular was adopted, referred for publication in the annual report, and also ordered to be printed and distributed at the discretion of the Secretary.

Dr. Edwards further reported that, as instructed by the Board, he had issued a circular letter to the officers of railroads in the State urging the adoption of precautions to prevent the spread of epidemic and infectious diseases, and that he had received satisfactory replies from the Pennsylvania Railroad Company and the Baltimore and Ohio Railroad Company, conveying the assurance of their desire to coöperate with the Board in such measures, and reporting the precautions already in use in the form of printed circulars for the instruction of employés.

The report was accepted, and the circulars referred for publication in the annual report.

Dr. Edwards also stated that he had received from the Executive Committee the following letter of instructions:

State Board of Health,
Executive Office, 313 South Fifteenth Street,
Philadelphia, *September 28, 1885.*

Joseph F. Edwards, M. D., *Chairman, Committee on Preventable Diseases and Supervison of Travel and Traffic.*

Dear Sir: At a meeting of the Executive Committee held Saturday, September 26th, you were instructed to make a careful investigation into the sanitary condition of the mining populations of this State, including in your inquiries the subjects of habitations, food, beverages, water-supply, habits of life, character and effects of labor, and sanitary condition of mines.

Said investigation is expected to cover a period of about three weeks, and to be made at such a time that a full report thereon may be presented to the Board at the regular meeting on the second Wednesday in November. You are authorized to draw upon the Secretary for the sum of one hundred dollars, or as much thereof as may be necessary to meet the expenses of such investigation.

(Signed,) BENJAMIN LEE,
Secretary.

In obedience to the above instructions, Dr. Edwards had paid repeated visits to a number of points in the mining regions, and had gained much information that would be of value to the Board, but the field was so wide, and the range of information asked for so extensive, that it would be folly to attempt to make a report at this stage of his investigation.

On motion, the action of the Executive Committee was indorsed, and the investigations were ordered to be continued.

Dr. Lee, Secretary of the same Committee, reported that, in obedience to the resolution of the Board, he had communicated with the Secretary of the Board of Agriculture, suggesting that the two Boards should coöperate in the effort to prevent the introduction and spread of infectious diseases, among our native stock, and had received from Secretary Edge, of that Board, cordial assurances of a desire to maintain an efficient concert of action for the purposes alluded to. Having learned through the President, Dr. Germer, of the existence of an epidemic of Texan fever among cattle at, and near, the city of Erie, he had commissioned Dr. Bryce, veterinary surgeon to the Board of Agriculture, to prepare a report of the epidemic, for the use of this Board, which, if it pleased the Board, he would read. Permission was accorded, the report was read, and referred for publication, as a part of the report of the Committee. A letter from Secretary Edge, of the Board of Agriculture, to President Germer, upon the same subject, was then read, and similarly referred.

The report of the Committee on Water-Supply, Drainage, Sewerage, Topography and Mines was then presented by Rudolph Hering, Esq., C. E., chairman.

This consisted of, *first*, Two elaborate maps, prepared under instructions from the Executive Committee, to serve as a basis for future statistical work, in reference to the distribution of diseases throughout the State. The first map indicated the "distribution of population," by means of a system of colored circles, readily seized by the eye and appreciated by the mind; and the second, the "intensity of travel," on all lines of rail-road in the State, by a similar graphic device.

On motion of Dr. McClelland, the thanks of the Board were tendered to Mr. Hering for the labor bestowed and ingenuity displayed in the execution of these very valuable maps, and they were referred for reduction and publication.

Mr. Hering then, *secondly*, presented a report on the general subject of

the pollution of rivers, with special attention to the pollution of the Schuylkill, in the immediate vicinity of the city of Philadelphia, but outside of the jurisdiction of the board of health of that city. This subject had been referred to his committee, by the Executive Committee, in consequence of a communication received from the Board of Health of Philadelphia, calling the attention of this Board to the existence of these evils, and requesting that steps be taken for their abatement. Appended to the report, were the report of the water department of Philadelphia, upon the same subject, and the charge of Judge Thayer, on the subject of the pollution of waters used as a source of water-supply for cities.

On motion, the report was adopted, and, together with the addenda, ordered to be published.

The report of the Committee on Public Institutions, Buildings and Places, and School Hygiene, Dr. J. H. McClelland, chairman, was then presented, as follows:

Owing to the brief time which has elapsed since our organization, your committee can report no special investigations, but, at this time, will offer certain recommendations for adoption by the Board, looking to effective work by the committee during the coming year. Your committee would, thereupon, ask your consideration of the following resolutions:

Resolved, That the Committee on Public Institutions and School Hygiene, in connection with the Secretary, be instructed to issue a circular addressed to the authorities or proprietors of all hospitals, asylums, public halls, and places of amusement, and churches in this State, requesting them to furnish information as to the sanitary condition of the buildings under their care or in their ownership, with special reference to ventilation, heating, air-space per individual, and water-closet arrangements, and that the portion of the act establishing this Board which refers to this subject be printed on the circular.

Resolved, That the Committee on Public Institutions and School Hygiene, acting in connection with the Secretary, be instructed to issue a circular addressed to all school authorities throughout the State asking for specific information as to the sanitary condition of the several schools under their care or supervision, with special reference to methods of ventilation and heating, the amount of air-space provided for each pupil in the school-rooms, mode of lighting, character of water supplied for drinking, and water-closet accomodations, and that the portion of the act creating this Board bearing upon the subject be printed upon the circular.

Resolved, That the Executive Committee of this Board be authorized to employ inspectors of schools and other public buildings, who shall be furnished with instructions in detail, and clothed with official authority to make inspections of all public buildings under the direction of the executive officer.

Resolved, That the Committee on Public Buildings and School Hygiene be instructed to confer with the Department of Public Education with re-

ference to the passage of a law making it a misdemeanor for any school-board, board of trustees, managing committee, or superintendent to proceed to the construction of any public educational building or school, or of an addition to any such building, without having first submitted the plans for the same to the State Board of Health, or to such sanitary officer as may be designated by said Board, and obtained the approval of such Board or officer.

The Secretary moved that the report be accepted and referred for publication, and that the resolutions be then considered *seriatim*.

It was carried.

The first resolution, in regard to hospitals, asylums and other public buildings, was then read and adopted.

The second resolution, in regard to schools, was read and adopted.

The third resolution, in regard to the employment of inspectors of public buildings by the Executive Committee, was read and adopted.

The fourth resolution, in regard to a conference with the Department of Public Education in reference to the plans for educational buildings, was read and adopted.

The Committee on Sanitary Legislation, Rules and Regulations, Pemberton Dudley, M. D., chairman, in the matter of the preparation of a digest of the laws of the Commonwealth, as far as they affect the powers and duties of this Board, reported progress.

The committee was instructed to continue the work and report not later than the regular meeting in May.

In the matter of proposing a plan for the organization of local or rural bureaus of health, the committee made a report, at length, suggesting the expediency of the establishment of county boards of health, with inspectors of townships. The report was accepted, and referred for publication.

The Secretary of the committee, Dr. Lee, presented a report, being the substance of addresses made by him before the Lehigh Valley Medical Association, the American Academy of Medicine, and the Association of Directors of the Poor in Pennsylvania, in support of the establishment of township boards of health. This was also referred for publication, as part of the report of the committee. It was also ordered that copies of the questions contained in the report of the chairman be printed by type-writer, and sent to each member of the Board.

Consideration of the By-laws being in order, the Secretary stated that, after consultation with the chairman of the Executive Committee, he had assumed the responsibility of postponing the printing of the constitution and by-laws until after the present meeting, in order that an opportunity might be afforded to suggest amendments, the result of the experience of three months' work under them.

It was moved by Dr. Dudley, that the subject of disinfectants be referred to the Committee on Preventable Diseases and Supervision of Travel and Traffic.

It was carried.

It was moved by Dr. McClelland that the Committee on Adulterations, etc., No. 6, and the Committee on Explosives, etc., No. 7, be consolidated as committee No. 6, under the title, Committee on Adulterations, Poisons, Explosives and other Sources of Danger to Life and Limb.

It was carried.

On motion of the Secretary, article VI of the by-laws, was stricken out, and the numbers of the subsequent by-laws respectively changed in accordance with the alteration.

The article stricken out was then, on motion of the Secretary, adopted as a regulation of the Board, under the title of Regulation of Travel and Traffic.

On motion of Dr. Engelman, the by-laws, as read and amended, were ordered to be printed. Dr. McClelland moved that the organization, etc., of the Board be printed with them. It was carried. The number of copies to be printed was left to the discretion of the Secretary. The Secretary then offered his report, as Treasurer, showing a balance in the treasury, October 1, 1885, of $1,313 57. The report was accepted and referred for publication.

The Secretary then presented his vouchers for bills paid by him to date, which were approved by the Board and ordered to be so indorsed.

An addition of thirty-five dollars was ordered to the amount already paid Dr. Lewis H. Taylor, of Wilkes-Barre, for his report on the Plymouth epidemic.

Mr. Hering then offered the following preamble and resolution:

WHEREAS, The Schuylkill river is used for drinking water by the cities of Philadelphia, Conshohocken, Norristown, Phœnixville, and Pottstown;

And whereas, A large amount of excrementitious matter is now allowed to enter the river, which is dangerous to the health of each of the above communities; therefore,

Resolved, That the executive officer of the Board be instructed to take such steps as may be necessary to prevent the entrance of excrementitious matter into the Schuylkill river above the city of Philadelphia.

The preambles and resolution were adopted.

The appointment of committees for the ensuing year being in order, the President announced the following appointments:

1. *Executive Committee.*—Pemberton Dudley, M. D., chairman, Rudolph Hering, C. E., Joseph F. Edwards, M. D., Benjamin Lee, M. D., secretary.

2. *Committee on Registration and Vital Statistics.*—Benjamin Lee, M. D., chairman, Edward William Germer, M. D., J. F. Edwards, M. D.

3. *Committee on Preventable Diseases, Disinfectants and Supervision of Travel and Traffic.*—Joseph F. Edwards, M. D., chairman, Pemberton Dudley, M. D.

4. *Committee on Water-Supply, Drainage, Sewerage, Topography and Mines.*—Rudolph Hering, C. E., chairman, J. H. McClelland, M. D.

5. *Committee on Public Institutions, Buildings and Places, and School Hygiene.*—J. H. McClelland, M. D., chairman, Rudolph Hering, C. E.

6. *Committee on Adulterations, Poisons, Explosives and other Sources of Danger to Life and Limb* —Pemberton Dudley, M. D., chairman, David Engelman, M. D.

7. *Committee on Sanitary Legislation, Rules and Regulations.*—David Engelman, M. D., chairman, Pemberton Dudley, M. D.

Dr. Dudley then offered the following resolutions, which were adopted:

Resolved, That this Board would respectfully suggest that city boards of health should require physicians to report cases of typhoid fever occurring in their practice in the same manner as they are now required to report infectious diseases generally.

Resolved, That typhoid fever appears so frequently to originate in defective local sanitary conditions, particularly those affecting milk and water-supply, cess-pools and sewers, as to make it eminently desirable that every case of the disease reported should be followed by an inspection of the premises by a sanitary expert.

Resolved, That it is the sense of this Board that the appropriations made by the councils of cities and boroughs in this State for sanitary purposes are altogether insufficient to enable the boards of health and health officers to fulfil their function of protecting the public health, and that the importance of increasing such appropriations be urged upon them.

Mr. Hering offered the following resolution, which was adopted:

Resolved, That the Secretary, and such members of the Board as may attend the coming annual meeting of the American Public Health Association, be constituted delegates to represent this Board at said meeting.

The Secretary then offered the following resolution, which was, on motion of Dr. Engelman, adopted:

Resolved, That this Board has learned with deep interest of the methodical and searching investigation into the territorial distribution of consumption in this State, now being prosecuted by Prof. William Pepper, believing that it will not only add to our general knowledge of the causes of this most wide-spread and fatal of all diseases, but that it may also result in the discovery of regions of comparative exemption from its ravages within our own borders.

Resolved, That this Board bespeaks the cordial coöperation of physicians throughout the State in making this effort fruitful of results.

Resolved, That Prof. Pepper be requested to put his deductions into such shape that the Board may be able to utilize them for the public good in its annual report.

On motion of Dr. Engelman, the determination of the next place of meeting was referred to the Executive Committee.

On motion of Dr. Dudley, the following resolution was adopted:

Resolved, That it is the sense of the Board that the expression of opinion, favorable or unfavorable, by a scientific physician, regarding any med-

ical or other substance exposed for sale and public use, ought not to be regarded as libelous, but that such expressions of opinion should be protected by law.

The Secretary then read a letter from Dr. H. M. Alexander, proprietor of the Lancaster County Vaccine Farm at Marietta, Penna., inviting the members of the Board to inspect his establishment and modes of procedure, and was directed to acknowledge it with thanks.

The Secretary then presented the following communication from the Committee on Health of the councils of Allegheny City:

Resolution relative to thanks of the Board of Health of the city of Allegheny to the officers of the State Board of Health.

Resolved, By the Committee on Health of the city of Allegheny, That the earnest and hearty thanks of this committee be, and are hereby, extended to the officers of the State Board of Health for their recent visit to our city, and for the able and intelligent report they have furnished of the result of their investigations.

OFFICE OF CLERKS OF COUNCILS,
CITY BUILDING, ALLEGHENY, *November 5, 1885.*

To the Officers of the State Board of Health:

GENTLEMEN: I hereby certify that the foregoing resolution was passed by the Committee on Health at their meeting held on Wednesday, the 4th instant.

Yours respectfully,
R. T. WHITE,
Clerk of Health Committee.

On motion, the Board then adjourned *sine die*.

I hereby certify that the foregoing is a correct copy of the minutes and transactions of the Board, (in abstract,) as directed to be made from the records, for the annual report.

BENJAMIN LEE,
Secretary.

REPORT OF THE SECRETARY.

To Edward William Germer, M. D., President of the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania:

SIR: The by-laws of this Board make it the duty of the Secretary to make a full report at the meeting in November of his official acts during the year ending October 1, preceding, and to accompany the same with recommendation of such measures as he shall deem necessary for the preservation of the public health and the faithful execution of the law, which report, it is further provided, shall constitute the basis of the report of the Board to be presented to the Governor, on or before the first Monday of December in each year, in accordance with the requirements of section 10, of the act establishing this Board.

The Board will scarcely expect of its Secretary, or the State of the Board, that the first three months of its existence should be fruitful of any very conspicuous results; and yet the duty assigned is too peremptory to be slighted.

In detailing his official acts, the Secretary has concluded to adopt the journal form as the simplest way of conveying an idea of the character of the duties devolving upon the Board.

THURSDAY, *July 2.*

Attended the meeting of the Board at the office of the Secretary of the Commonwealth, at 2, P. M. Presented a draft of by-laws for the government of the Board, which, with some modification, was adopted.

The Board adjourned at 6, P. M., to meet again at 8, P. M.

At the evening session, offered a series of resolutions, looking to the establishment of relations between the different branches of the State government, the National government, and the Boards of Health of other States, and this Board, and outlining the initiatory work of the Board, which were approved by the Board.

The Board adjourned at 10.30, to meet at 9, A. M., the day following.

FRIDAY, *July 3.*

Attended the meeting of the Board at 9, A. M., in the office of the Secretary of the Commonwealth. Presented a draft of an address of the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania to the people of Pennsylvania, which was adopted by the Board with modifications.

The first duty of the Secretary upon the adjournment of the Board at 12 M., was to establish relations with the Auditor General's Department, which was done in company with the President of the Board. They were receiv-

ed with much courtesy by the chief clerk of the department, Mr. Thomas McCamant, who furnished the Secretary with blank vouchers and requisitions, and the information necessary for conducting the financial affairs of the Board.

The Secretary then visited the Department of Internal Affairs, where, in the absence of the Secretary, he had a very satisfactory interview with J. W. Greenland, Esq., Deputy Secretary of Internal Affairs.

The Board being, by the terms of the law, made dependent upon the Department of Internal Affairs for its apartments, stationery, etc., he at once made requisition for books, stationery, and desk furniture, necessary for the work of the Board.

Owing to the fact that a change was at that moment being made in the department of public printing, the arrangements for the printing of the "Address of the Board to the people of the State" were obliged to be deferred.

SATURDAY, *July 4.*

Wrote to Dr. E. O. Shakespeare, of Philadelphia, requesting him to prepare a report of the pathological conditions observed in the autopsies made by him at Plymouth, Luzerne county, during the present epidemic of typhoid fever in that town; to Dr. Morris S. French, of Philadelphia, requesting him to prepare a report of the financial outlay and loss, direct and indirect, resulting from the Plymouth epidemic, and to Dr. Lewis H. Taylor, of Wilkes-Barre, requesting him to furnish a complete history of the epidemic at Plymouth, accompanied by a map indicating sources of water-supply.

TUESDAY, *July 7.*

Issued call for special meeting of the Executive Committee. Transmitted resolutions of Board to Dr. J. F. Edwards, chairman Committee on Preventable Diseases and Supervision of Travel and Traffic, instructing him to prepare a circular in regard to Asiatic cholera, and to address a communication to the principal officers of all railroads in the State, urging them to adopt sanitary measures and formulate a system of sanitary supervision of their trains.

THURSDAY, *July 9.*

Transmitted resolutions of Board to the boards of health of the cities of Philadelphia, Pittsburgh, and Erie, calling for immediate reports.

FRIDAY, *July 10.*

Attended meeting of Executive Committee, at executive office of the Board, No. 313 South Fifteenth street, Philadelphia.

Sent resolutions of Board to the medical journals and the daily press.

SATURDAY, *July 11.*

Received notification from Dr. David Engelman, of Easton, of his appointment as a member of the Board to fill the vacancy caused by the appointment of Dr. Benjamin Lee as Secretary. Notified the other members of the Board, in writing, of the appointment.

MONDAY, *July 13.*

Received communication from the Board of Health of Philadelphia, containing a resolution calling the attention of the Board to the existence of serious nuisances existing on the west bank of the Schuylkill river, as well as at other points outside of the limits of the city of Philadelphia, affecting the purity of the city's water-supply, and requesting the Board to take steps toward their abatement. Went to Harrisburg. Made out forms for letter-book, library record, cash-book, letter-heads, etc., etc.

TUESDAY, *July 14.*

Interviews with Secretary of Internal Affairs and Deputy Secretary Greenland. Made arrangements for a full set of books for the records of the Board. Interview with State Printer, Mr. E. K. Meyers; arranged for printing the act establishing the Board, the "Address of the Board to the People of the State," and forms of letter-heads, etc.

WEDNESDAY, *July 15.*

Returned from Harrisburg, and attended regular quarterly meeting of the Executive Committee at the executive office. Reported favorable result of an interview with Attorney General Cassidy on the question referred by the Board for his decision as to its authority to order inspections of food and drugs.

THURSDAY, *July 16.*

Consulted all the members of the Board by letter as to the authority of the Board to create salaried offices.

FRIDAY, *July 17.*

Received from the Committee on Health of Councils of the city of Allegheny, complaint of nuisances existing immediately outside of the city, with a request for an inspection.

SATURDAY, *July 18.*

Wrote to Harrisburg Stencil Works ordering seal and press.

TUESDAY, *July 21.*

Wrote to Dr. L. H. Taylor, of Wilkes-Barre, requesting him to ascertain at what house in Philadelphia the individual lodged who was supposed to have carried the seeds of typhoid fever from that city to Plymouth, with a view to instituting an inspection of the premises and neighborhood.

WEDNESDAY, *July 22.*

Made application in writing to members of Congress for copies of United States census reports, and to members of the Legislature for Pennsylvania geological survey reports for the library of the Board.

FRIDAY, *July 24.*

Completed arrangements for ordering printed matter directly from the Superintendent of Public Printing instead of from the Department of Internal Affairs. Corrected proof of "Address of Board."

MONDAY, *July 27.*

Forwarded lists of standing committees to all the members of the Board.

TUESDAY, *July 28.*

Telegraphed to Dr. Germer to make an inspection of Camp Gallagher, and to Dr. Engelman to make an inspection of Camp Sigfried.

WEDNESDAY, *July 29.*

In company with Dr. Pemberton Dudley, made a sanitary inspection of Camp Muhlenberg, near Media, First brigade, Pennsylvania National Guard.

Purchased works on sanitary subjects for the library of the Board.

FRIDAY, *July 31.*

Wrote to General Snowden, commanding Camp Muhlenberg, transmitting report of inspection, for the information of his department.

MONDAY, *August 3.*

Received complaint of nuisance existing at Rosemont, Montgomery county, through the secretary of the Philadelphia Board of Health, with report of cases of fever attributed to the same.

THURSDAY, *August 6.*

Made an inspection of the quarantine station of the port of Philadelphia, at the Lazaretto, in company with Dr. John H. Rauch, secretary of the State Board of Health of Illinois, and Dr. Cleemann, of the Philadelphia Board of Health.

Addressed a communication to His Excellency, President Cleveland, announcing the organization of the Board, and requesting recognition as regards the distribution of the national appropriation to meet epidemics, in case of the occurrence of a sanitary emergency.

FRIDAY, *August 7.*

Applied to Postmaster General Vilas for post route maps of Pennsylvania, for the use of the Committee on Water Supply, Drainage, and Topography.

MONDAY, *August 10.*

Sent instructions to Dr. Pemberton Dudley to investigate the premises where the originator of the Plymouth epidemic contracted the disease in Philadelphia.

WEDNESDAY, *August 12.*

Notified Daniel Kerrigan, of Rosemont, Montgomery county, to abate nuisance on his premises. Sent similar notice to William Moulden, in same village. Acknowledged donations to library from twenty-four sources.

MONDAY, *August 17.*

Obtained opinion from Attorney General Cassidy as to the proper prosecuting officer for the Board.

TUESDAY, *August 18.*

Consulted "Purdon's Digest of Laws of Pennsylvania," in order to determine mode of organization of local boards of health, as at present established by statute.

WEDNESDAY, *August 19.*

Went to Quakertown, and delivered an address before the Lehigh Valley Medical Association, on "Proper Organization of Local Boards of Health in Pennsylvania."

FRIDAY, *August 21.*

Addressed a communication to His Excellency, President Cleveland, on the importance of vigilant quarantine at Lewes, at the mouth of Delaware bay, and an appropriation for the National Board of Health.

WEDNESDAY, *August 26.*

Attended special meeting of the Executive Committee, at the executive office, Philadelphia.

THURSDAY, *August 27.*

Transmitted financial report of Board, for the first quarter, to the Auditor General, with requisition for appropriation.

WEDNESDAY, *September 2.*

Notified by the Board of Health of Philadelphia of the existence of cases of small-pox at Spring Mill, Montgomery county. Requested said board to send disinfector and vaccinator to the place indicated, at the expense of the State Board.

Subsequently, had a personal interview with the Board of Health of Philadelphia on the question of coöperation between the two boards in districts lying outside of the city limits. Addressed letter of inquiry to Dr. Germer in reference to Texas fever among cattle at Erie, and preparation for small-pox.

Wrote to secretaries of State Boards of Health of New Jersey and Del-

aware, requesting them to take part in an inspection of the United States Marine Hospital Service quarantine station at Lewes.

Friday, *September 4.*

Visited quarantine station of United States Marine Hospital service at Lewes, Delaware, in company with delegation of the Board of Health of Philadelphia, Surgeon Bailhache, of the Marine Hospital service, and Dr. Marshall, of the State Board of Health of Delaware.

Tuesday, *September 8.*

Authorized Dr. J. Bryce, State Veterinary Surgeon, of Erie, to make a report on the recent epidemic of splenic fever at that place.

Subscribed to *Sanitary Monitor* and *Sanitarian* for the use of the Board.

Wrote to their Excellencies, President Cleveland and Governor Pattison, transmitting the "Address of the Board."

Made arrangements for addressing circulars to all physicians throughout the State, announcing the existence of the Board, and claiming their active coöperation in its work.

Thursday, *September 17.*

Left for Allegheny City, with Mr. Rudolph Hering, of the Board, to investigate nuisances referred by the Board of Health of that city.

Friday, *September 18.*

Made a tour of inspection of the abattoir on Herr's Island, in the Allegheny river, of the Spring Garden district, and the Butcher's Run district, in company with Mr. Hering, chairman of the Committee on Water-Supply and Drainage, Dr. J. H. McClelland, of Pittsburgh, a member of the committee, the health officer of Allegheny, and the Committee on Health of the Councils of the city of Allegheny, acting by virtue of a special act of legislation as a board of health.

Saturday, *September 19.*

Inspected the water-supply of the city of Allegheny, examining the water works and point of intake, and following up the river for a distance of eight miles, to a point above the sources of pollution from the almshouse and work-house, both of which institutions we visited cursorily, and were much pleased with their cleanliness and evidence of care in sanitary provisions.

Left Pittsburgh at 11.30, P. M.

Wednesday *September 23.*

Had an interview, by appointment, at the executive office, with Auditor Ely, of Whitemarsh township, Montgomery county, in regard to precautions against small-pox at Spring Mill.

THURSDAY, *September 24.*

Had an interview, by appointment, at the executive office with residents of Rosemont, Montgomery county, in reference to nuisances in that village, supposed to be prejudicial to the public health.

Received information from Major Veale, health officer of the city of Philadelphia, of the existence of cases of typhoid fever at West Fernwood, Delaware county, and of insanitary conditions at that place, supposed to be the cause of the same.

FRIDAY, *September 25.*

Addressed a communication to the Board of Health of Philadelphia, alluding to the fact that the health of the city was constantly menaced by insanitary conditions maintained in the districts immediately outside of the city limits, and suggesting that some plan of coöperation might be agreed upon, by which the trained inspectors and disinfectors of the city board could act under the authority of the State Board, in investigating and removing such sources of danger.

Correspondence with the complainants in regard to the nuisances at Rosemont.

SATURDAY, *September 26.*

Attended a special meeting of the Executive Committee, called to take action in regard to the method of procedure against parties maintaining nuisances.

Had an interview with Dr. Taylor, medical inspector, and Mr. Kennedy, disinfector and nuisance inspector, of the Philadelphia Board of Health, and gave them instructions to make an inspection of the premises reported to be in an insanitary condition at Fernwood, Delaware county.

SUNDAY, *September 27.*

Visited Fernwood, and made a personal investigation of the house in which the reported cases of typhoid fever were lying, and in which one patient had died of that disease. Met Dr. Roland, the attending physician, saw the patients with him, and recognized them as being ill with typhoid fever. Found very filthy conditions, both on the premises and in the road in front of them.

TUESDAY, *September 29.*

Gave Dr. J. F. Edwards, a member of the Board, written instructions to make a sanitary inspection of the principal mining villages of the State, especially investigating the modes of life, habitations, food, and habits of the inhabitants, drainage and water-supply of the villages, etc., and to report to the Board at its next regular meeting.

Wednesday, *September 30.*

Appointed Dr. William B. Atkinson, of Philadelphia, to the position of special medical inspector of the Board, for the district including Philadelphia and the adjacent counties, subject to the approval of the Board.

From the foregoing statement of the work of the Secretary during the past three months, it is evident that the first and most pressing want of the State, from a sanitary point of view, is the organization of boards of health in the rural districts. What precise form this organization shall take, it is for the Board, in its wisdom, to decide, and to recommend it to the Legislature at its next meeting. The Secretary is strongly impressed with the belief, founded upon the experience of other States, whose health organization is of some years' duration and has been eminently successful, that the township will be found to be the unit of territory, and of official supervision, best suited for the maintenance an efficient and intelligent oversight of the interests of the lives and health of its inhabitants. At the same time, he is prepared to acquiesce in any decision of the Board upon the subject, and to do all he can to make the plan decided upon effective. He has been impressed, in his study of the political life of the people of the State, with the remarkable fact that the majority of the population are living entirely without local self-government. The town-meeting of New England, an institution which has done so much to maintain public spirit and promote good order and prosperity there, is entirely unknown here. The several township officers have each their several duties to perform, quite independently of one another, and never meet in council to consult upon the general interests of the town. The saying that "there is nothing certain in this world but death and taxes," is eminently true of this State, for assessors abound, and health is without protection. That the Commonwealth, generally, should have maintained so fair a reputation for good order, prosperity, and salubrity, with so loose a system of local government, speaks volumes for the capacity of its people for individual self-government, their self-respect, and their respect for the rights, and regard for the well-being, of their neighbors. Should the officers of the townships, or such of them as might seem expedient, be by law instructed to associate in the protection of the public health, it would be a step in advance towards a more thorough organization of many other important interests as well.

The next most urgent need is a proper appreciation, on the part of borough councils, of the grave responsibilities devolved upon them by the laws of the Commonwealth as the conservators of public health. Every borough council in this State is, in point of fact, a board of health, possessed of absolute authority for the removal and abatement of "nuisances" prejudicial to the public health, and the adoption of measures necessary to control and stamp out infectious diseases. Comparatively few of them

appear to understand this fact in all its bearings, and it will be for the Board to furnish them with a brief compend of the enactments upon this subject, and urge them to take such measures as may be necessary to make them operative.

The registration of vital statistics—a function of the Board of extreme importance—is delayed from the fact that the act establishing this bureau provides for no compensation for the officers to whom the Board would naturally look for returns, namely, in the case of the marriages, the clerks of orphans' courts, and in that of medical practitioners, the prothonotaries. Many of these gentlemen have courteously responded to the request of the Board, but a large number protest, and properly so, against being compelled to do work without pay. The returns are therefore, so incomplete that it will be unwise to attempt to present them at present. Copies of the forms issued by the Board for this purpose accompany the report. It is to be hoped that the Legislature, at its next session, will see the justice of remedying this omission, and the Board should propose an amendment to the law for that purpose. Applications for relief from insanitary conditions have reached the Secretary from the most distant parts of the State, showing that the people were really waiting impatiently for the erection of a health department, and wherever the Secretary has felt authorized to interfere, his decisions have been received with deference and regarded as final. The great epidemic of typhoid fever in Plymouth, Luzerne county, had entirely spent its force when the Board was organized, and it is a matter of congratulation that since that time no serious outbreak of pestilential disease has occurred in any part of the State. The threatened epidemic of small-pox at Lafayette, Montgomery county, which might readily have extended to Philadelphia, was promptly nipped in the bud by the concurrent action of the Board of Health of Philadelphia with this Board.

The introduction of Texan, or splenic, fever among cattle at Erie, called for prompt interference on the part of the President of the Board, Dr. Germer, the energetic health officer of Erie, who, with the aid of the State veterinarian, Dr. Bryce, succeeded in limiting the disease to a comparatively small number of cattle.

As the Board announced in its "Address to the People," its aim is not to obtrude its work upon the public notice, or endeavor to create sensations, but quietly and understandingly to make its influence felt in every portion of the State, in educating the people in matters pertaining to the promotion of health, and to stimulate and perfect sanitary organization, and it is a matter for congratulation that it has been able to devote the first few weeks of its existence principally to those ends without being called upon by any great emergency for the more public exercise of its powers.

The number of written communications received and personally read by the Secretary has been one hundred and eighty. The number of commu-

nications written by the Secretary has been three hundred and eighteen. The number of volumes purchased for the library of the Board is twenty-two. The Plumber and Sanitary Houses, S. S. Hellyer; Manual of Practical Hygiene, Parkes, two volumes; Filth Diseases and their Prevention, John Simon, M. D., F. R. C. S.; How to Disinfect Our Homes, B. W. Palmer, A. M., M. D.; Ventilation and Heating, Billings; American Sanitary Engineering, Philbrick; Sanitary Examination of Water, Air, Food, Fox; How to Drain a House, Waring; Public Health Reports and Papers American Public Health Association, ten volumes; Brightly's Purdon's Digest, two volumes; Medical Directory, 1885, Philadelphia, and States of Pennsylvania, New Jersey, Delaware. The number of volumes presented to the Board is as follows:

Reports of Boards of Health, National, State, and Municipal, the gift of the several Boards, sixty-nine; Pennsylvania Second Geological Survey, the gift of the Honorable Robert Adams, Jr., and of the Honorable David Engelman, fifty-eight; Annual Reports of Secretary of Internal Affairs of Pennsylvania, the gift of Honorable J. Simpson Africa, seven; Reports of Pennsylvania Geological Survey, the gift of the Honorable James Gay Gordon, fifteen; Report of Board of Public Charities, gift of the Honorable Robert Adams, Jr., one; Report on Agriculture of Pennsylvania, gift of the Honorable Robert Adams, Jr.; two copies Smull's Legislative Hand-Book, the gifts of the Honorable Robert Adams, Jr., one, and Honorable James Gay Gordon, respectively; Volume XI, Tenth Census of the United States on Mortality and Vital Statistics, and two volumes Compendium of the Tenth Census, the gift of the Honorable H. H. Bingham; Annual Reports of the Water Department of Philadelphia, 1882, 1883, 1884, ten copies each, the gift of Col. William Ludlow, thirty; making a total of volumes now in the possession of the Board of one hundred and eighty-four.

The number of pamphlets received has been one hundred and fifty-eight. Besides these, the Board is indebted to its President, Dr. Germer, for a number of volumes of the *Sanitarian* and many German periodicals on sanitary subjects, as well as a large number of daily papers, from which cuttings have been made and filed for reference. The Secretary has subscribed to the *Sanitarian*, and the *Sanitary Monitor*.

The following circulars and forms have been sent out from this office, or are in the hands of the printer:

Address to the people of the State of Pennsylvania.

Circular to the cities of Philadelphia, Pittsburgh, and Erie, in reference to precautions against cholera.

Circular to physicians in Pennsylvania.

Circular to editors of newspapers in Pennsylvania.

Circular to State and other Boards of Health.

Form for registration of practitioners of medicine and surgery.

Form for registration of marriages.

Regulation regarding the abatement of nuisances.

Regulations for slaughter-houses, bone-boiling, or other similar establishments.

Form for complaints of nuisances.

Form for notices to abate nuisances.

Circular of precautions against cholera.

Circular of precautions against small-pox.

Regulations for the sanitary supervision of travel and traffic.

DISTRIBUTION OF ACT, ADDRESS AND CIRCULARS.

Copies of the "Act to establish a State Board of Health," and of the "Address of the State Board of Health to the people of Pennsylvania," were sent to His Excellency, the Governor of Pennsylvania, and to all heads of departments at Harrisburg; to the mayors of all cities, the burgesses of all boroughs, and supervisors of all townships and villages in Pennsylvania; to the members of the Pennsylvania Legislature, to all judges, district attorneys, and prothonotaries, and to all boards of health in Pennsylvania; To His Excellency, the President of the United States, and all heads of departments at Washington.

Copies of the Act and of a circular letter to physicians were sent to all physicians in Pennsylvania.

Copies of the Act, of the Address and of a circular letter to editors were sent to six hundred editors in Pennsylvania.

Copies of the Act and of the Address were sent to all County medical societies in Pennsylvania, to all State medical societies in the United States and Canada.

Copies of the Act, of the Address and of a circular letter to boards of health were sent to all State boards of health in the United States and Canada, to the boards of health or health officers of all large cities in the United States, and to the Secretaries of National boards of health or health bureaus of all European countries.

The following is a list of printed matter and stationery furnished to the Board by the Superintendent of Public Printing, Honorable W. Hayes Grier, on requisition of the Secretary, and in accordance with forms devised by him:

One record book for library.

Five hundred half-sheet letter blanks for acknowledging receipts of books, etc.,

Ten thousand postal wrappers with arms of State and name of Board.

Seven thousand circulars to physicians.

Six hundred circulars to editors.

Sixteen thousand complimentary slips.

Five hundred sheets unruled letter paper with heading of Board.

Two hundred and fifty postal notices of meetings of Board.

Three hundred and fifty postal notices of meetings of Executive Committee.

Four hundred postal acknowledgments.

Five hundred notices of nuisance.
Three hundred complaints of nuisance.
Five hundred addressed envelopes.
Five hundred circulars to prothonotaries and clerks of orphans' courts.
Two hundred circulars to boards of health.
One thousand circulars, regulations for slaughter-houses, etc.
Five hundred postal cards with heading.
Two hundred postal cards addressed.
Twenty thousand copies circular, precautions against cholera.
Twenty thousand copies circular, precautions against small-pox.

The following is a list of books, stationery, etc., furnished for the use of the Board upon the requisition of the Secretary by Deputy Secretary Greenland, of the Department of Internal Affairs:

One book for minutes of the Board.
One book for the minutes of the Executive Committee.
One book for record of letters.
One book for journal of Secretary.
One book for cash account.
One book for ledger account.
Three scrap-books.
Twelve maps of Pennsylvania.
One letter-copying press.
Four letter-press books.
Ten thousand copies address of State Board of Health to the people of Pennsylvania.
Ten thousand copies act to establish a State Board of Health.
Two thousand letter-heads.
Two thousand note-heads.
Two thousand large envelopes.
Two thousand small envelopes.

The following is a list of articles purchased for the use of the Board by the Secretary:

One dozen document boxes.
One piece rubber.
One box rubber bands.
One nickel blotter.
One cyclostyle.
One seal with press.
Two tin signs.
One fountain pen with pocket.
One copying-book.
One bottle copying-ink.

REPORT OF SECRETARY AS TREASURER.

The Secretary begs leave respectfully to report

That there was received from the State Treasurer, July 3, 1885, the appropriation for the first quarter,		$1,250 00
And September 3, 1885, the appropriation for the second quarter,		1,250 00
Making a total of receipts,		$2,500 00
That there have been expended, up to October 1, 1885, for traveling and other necessary expenses of members while on duty,	$193 85	
For postage,	130 15	
For books and maps,	29 05	
For furniture,	51 20	
For clerical services,	8 00	
For scientific report,	10 00	
For express, telegraph, etc.,	14 18	
For salary of Secretary,	750 00	
		1,186 43
Leaving a balance in the treasury, October 1, 1885, of		$1,313 57

Respectfully submitted,

BENJAMIN LEE,
Secretary.

CATALOGUE OF

BOOKS AND PAMPHLETS

IN

LIBRARY OF STATE BOARD OF HEALTH.

DECEMBER 31ST, 1885.

Reports of Boards of Health.

National, 1879, (1 copy;) 1880, (2 copies;) 1881, (2 copies;) 1882, (3 copies;) 1884, (2 copies.)

New York, 1880, (1 copy;) 1881-82, (2 copies;) 1883, (2 copies;) 1884, (2 copies.)

Michigan, 1873, (1 copy;) 1882, (1 copy;) 1883, (3 copies;) 1884, (1 copy;) 1885, (8 copies.)

Illinois, 1880, 1883, and 1884, 1885, (1 copy each;) report of proceedings at quarterly meeting, (10 copies.)

Mississippi, 1878-79, (1 copy;) 1880-81, (1 copy;) 1882-83, (1 copy;) 1884, (1 copy.)

New Jersey, 1884, (1 copy.)

Massachusetts, 1879, (2 copies;) 1877, 1880, 1882, 1883 and 1884, (1 copy each.)

Connecticut, 1883, (1 copy;) 1884, (1 copy.)

Wisconsin, 1882, (2 copies;) 1884, (2 copies.)

Minnesota, 1884, (1 copy.)

Tennessee, 1877-80, and 1880-84, 1885, (1 copy each.)

Ontario, Canada, 1882, (1 copy;) 1883, (3 copies;) 1884, (2 copies.)

Indiana, 1884, (1 copy.)

West Virginia, 1884, (1 copy.)

District of Columbia, 1879, (1 copy.)

Iowa, 1885, (1 copy.)

New Hampshire, 1882, (2 copies;) 1883, (1 copy;) 1884, (1 copy;) 1885, (1 copy.)

Philadelphia Health Office Report, 1879, (1 copy;) 1882, (1 copy;) rules, (4 copies.)

Colorado, 1879-1880, (1 copy.)

City of Reading, 1877, 1878, 1879, 1880, 1881, 1882, 1883, and 1884, (1 copy each.)

City of Pittsburgh, 1873, (1 copy;) 1875, (1 copy;) 1876, (2 copies;) 1877, (1 copy;) 1878, (1 copy;) 1879, (2 copies.)

Proceedings of the State Board of Health of Kentucky, quarterly meeting, 1885, (1 copy.)

Maryland, 1880, (1 copy.)

Reports of Pennsylvania Second Geological Survey.

A. A. Anthracite Region, Report 1. Given by Robert Adams.

A. His Sketch of Geological Explorations. Given by D. Engelman.

A. C. Coal Mining.

A. C. Coal Mining, Atlas to.

B. Preliminary Report on the Mineralogy of Pennsylvania.

C. C. Magnesian and Micaceous Ore Belt of York, Adams, Cumberland, and Franklin Counties.

C. Iron Ore Belts of York and Adam's Counties. Given by D. Engelman.

BOSTON MEDICAL LIBRARY ASS'N. AUG 11 1887

D. D. Lehigh District, Brown Hematite Ore Ranges. Given by D. Engelman.

D. Lehigh District, Brown Hematite Ore Ranges. Given by D. Engelman.

D. 5. Adams, Franklin, and Cumberland maps.

E. Azoic Rocks, Part 1. Given by D. Engelman.

D. 3. Volume 1. Lehigh and Northampton.

D. 3. Atlas to " "

F. Fossil Ore, Juniata Valley.

G. Bradford and Tioga. Given by D. Engelman.

G. 6. Pike and Monroe. Given by R. Adams.

G. 7. Wyoming, Lackawanna, Luzerne, Columbia, Montgomery, and Northumberland.

H. Clearfield and Jefferson District. Given by D. Engelman.

H. H. Bituminous Coal Fields, Cambria and Somerset, Part 1, Cambria. Given by D. Engelman.

H. H. H. Bituminous Coal Fields, Cambria and Somerset, Part 2, Somerset. Given by D. Engelman.

J. Venango County District. Given by D. Engelman.

J. J. Oil-well Rectifier and Levels. Given by D. Engelman.

J. 4. Warren County Oil-wells. Given by R. Adams.

K. Bituminous Coal Fields, Greene and Washington Districts. Given by D. Engelman.

K. K. Bituminous Coal Fields, Fayette and Westmoreland. Given by D. Engleman.

K. K. K. Bituminous Coal Fields, Ligonier Valley. Given by D. Engelman.

L. Coke Manufacture, Fayette and Westmoreland. Given by D. Engelman.

M. Laboratory of the Survey. Given by D. Engelman.

N. Levels above Tide. Given by D. Engelman.

O. Museum Catalogue. Given by D. Engelman.

Q. Beaver, North Allegheny, South Butler Bituminous Coal Fields. Given by D. Engelman.

Annual Reports, Pennsylvania.

Annual Report of the Secretary of Internal Affairs, on Railroads, Canals, and Telegraphs. Part IV, 1881. Given by J. Simpson Africa.

Annual Report of the Secretary of Internal Affairs on Railroads, Canals, and Telegraphs. Part IV, 1882. Given by J. Simpson Africa.

Annual Report of the Secretary of Internal Affairs on Land Office and Assessments. Part I, Land Office; Part II, Assessments, 1883. Given by J. Simpson Africa.

Annual Report of the Secretary of Internal Affairs. Part I, Land Office; Part II, Assessments, 1884. Given by J. Simpson Africa.

Report on Pennsylvania and Ohio Boundary, 1883. Given by J. Simpson Africa.

Report of the Board of Public Charities, 1883, also 1884, and pamphlet. Given by Robert Adams, Jr.

Report of Board of Agriculture of Pennsylvania, 1883, (2 copies.)

Laws of Pennsylvania, 1881.

Annual Report of the Philadelphia Water Department, 1882, (4 copies;) 1883, (4 copies;) 1884, (4 copies.) Col. William Ludlow.

Compendium of the Tenth Census of the United States, 1880. Parts I and II. Hon. H. H. Bingham.

Tenth Census of the United States, 1880, Volume XI, on Mortality and Vital Statistics. Hon. H. H. Bingham.

Transactions of the Medical Society of the State of Pennsylvania. 1881, 1882, 1883, and 1884. (1 copy each.)

Sanitary and Statistical Report of the Surgeon General of the Navy: 1880. (1 copy.)

Pamphlets.

Report upon the Epidemic of Typhoid Fever at Plymouth, Luzerne County, Pa., (4 copies.)

Water Pollution—Wells, (1 copy.)

Address of H. M. Thompson, D. D., at Detroit, Michigan, (2 copies.)

Common Law Citations relating to Nuisances, (1 copy.) Given by J. A. Watson.

Address to the Graduating Class of Dartmouth Medical College, (1 copy.)

Disinfection and Disinfectants. Preliminary Report of Committee on Diseases of A. P. H. Association, (100 copies.) Dr. Rohe.

Origin and History of American Medicine, (1 copy.)

Correspondez-Blatt, (Bund III;) (1 copy.)

Proceedings of the Eighth Annual Conference of Charities and Correction, (1 copy.)

The Small-pox, its Restriction and Prevention. Tennessee State Board of Health, (1 copy.)

Diphtheria, its Restriction and Prevention. Tennessee State Board of Health, (1 copy.)

Forms and Circulars, (7 in number,) Tennessee and Michigan.

Ventilation of the Madison Square Theater, (1 copy.)

Annual Report of the City Register of Boston, 1881, (1 copy.)

An Epidemic of Typhoid Fever from Defective Drainage, (1 copy.)

The Present State of the Germ Theory, 1885, (1 copy.)

The Origin and Progress of the Malaria Fever now Prevailing in the North-Eastern States, 1884, (1 copy.)

Proceedings and Debates of the Annual Convention of Cattle Commissioners, 1868, (1 copy.)

Report of the Committee on Public Hygiene and State Medicine, made to the Medical Society of the State of California, 1880, (1 copy.)

Some Remarks upon National and International Sanitary Jurisprudence, 1881, (1 copy.)

Conference of State and Local Boards of Health at the Capitol, St. Paul, Minnesota, 1885, (1 copy.)

Sanitary Influence of Forest Growth, 1885, (1 copy.)

A State Board of Medical Examiners, 1884, (1 copy.)

Sewerage Disposal, 1884, (1 copy.)

The Milk Supply of our Large Cities, J. Cheston Morris, M. D., (1 copy.)

Address on Hygiene, 1881. Dr. Benjamin Lee.

Differentiation the Test of Civilization, (1 copy.) Dr. Benjamin Lee.

Report of the Philadelphia County Medical Society on Meteorology and Epidemics, 1878, (1 copy.) Dr. Benjamin Lee.

Regulations of the Board of Health, of Fall River, (2 copies.)

State Board of Health of New York.

Report on Sanitary Condition of the City of Schenectady, (2 copies.)

Report on Sewerage of the City of Kingston. (1 copy.)

Report on Sewerage of Mt. Vernon, (2 copies.)

Report on Malaria at Yorktown, (1 copy.)

Report on Sanitary Condition of Havana, (1 copy.)

Report on Sewerage of Saratoga Springs, (1 copy.)

Report on Sewerage for the Village of Malone, (1 copy.)

Report on the Martinville Sewer, (1 copy.)

Report on the Albany Basin, (1 copy.)

Report on Diphtheria at Sandy Hill, (1 copy.)

Report on Trichinosis at Arietta, (1 copy.)

Manual of Laws relating to the Public Health, (1 copy.)
Introductory to the Fifth Annual Report.
Report on the Drainage of Abandoned Chemung Canal, (1 copy.)
Report on the Practical Operation of the Separate System of Sewers, (1 copy.)
Report on the Policy of the State respecting Drainage of Large Swamps, (1 copy.)
Report on the Law for the Sanitary Protection of Water Supplies, (1 copy.)
Report on the Proposed Use of an Abandoned Low Ground for the Erection of a School House, (1 copy.)

State Board of Health of Minnesota.

Circular on Glanders, (1 copy.)
Circular on Diphtheria, (1 copy.)
Tracts upon Contagious Diseases, (1 copy.)
Tracts upon Small-pox, (1 copy.)
Tract upon Typhoid Fever, (1 copy.)
An Act relating to Infectious and Epidemic Diseases, (1 copy.)

Journals, Etc.

National Board of Health Bulletin: Volumes I, II, and III.
The Sanitarian, (about 3 volumes to date.)
The Sanitary Monitor: Volume I, Nos. 4, 5, and 6.
Annals of Hygiene: Volume I, Nos. 1, 2, 3, 4, 5, and 6.

Books Purchased.

Reports and Papers of the American Public Health Association: Volumes I, II, III, IV, V, VI, VII, VIII, and IX.
Manual of Practical Hygiene: Parkes. Volumes I and II.
The Plumber and Sanitary Houses: by S. S. Hellyer. (1 copy.)
How to Drain a House: Waring. (1 copy.)
Filth Diseases and their Prevention. (1 copy.)
Sanitary Examination of Water, Air, and Food: Fox. (1 copy.)
Text Book of Hygiene: Rohe. (1 copy.)
American Sanitary Engineering. (1 copy.)
Ventilation and Heating: Billings. (1 copy.)
Sanitary Suggestions. (1 copy.)
Rocky Mountain Health Resorts. (1 copy.)
Map of Pennsylvania.
Marriage Laws of Pennsylvania.
Medical Directory of Pennsylvania.
Brightley's Purdon's Digest of the Laws of Pennsylvania. (2 volumes.)

PART II—APPENDICES.

APPENDIX A.

REPORTS OF STANDING COMMITTEES.

1. Report of Executive Committee. Pemberton Dudley, M. D., Chairman.
2. Report of Committee on Water Supply, Drainage, Sewerage, Topography and Mines. Rudolph Hering, C. E., Chairman.
3. Report of Committee on Public Institutions and Places, and School Hygiene. J. H. McClelland, M. D., Chairman.
4. Report of Committee on Sanitary Legislation, Rules and Regulations. Pemberton Dudley, M. D., Chairman.
5. Address by Dr. Benjamin Lee, Secretary, on "The Proper Organization of Local Boards of Health." Ordered to be printed in connection with the report of the Committee on Sanitary Legislation.

REPORT OF EXECUTIVE COMMITTEE.

The Executive Committee reported that they had held several meetings, the business transacted being in substance as follows:

First. Fixing the time of the quarterly meetings, viz: On the third Wednesday of July, October, January, and April in each year.

Second. Authorizing the Secretary to act for the committee in the procurement of a suitable seal, as provided for at the July meeting of the Board.

Third. Authorizing the chairman of the Committee on Regulations and Sanitary Legislation to secure the assistance of an attorney-at-law to aid him in the preparation of the *resumé* of State sanitary legislation—the cost of the same not to exceed ten dollars.

Fourth. The subject of the appointment of a pathologist to the Board at a fixed salary came up for consideration, the Board being tendered the services of a most competent expert in that department of investigation. After a conference with the Attorney General, the Committee were led to doubt the right of the Board to create a salaried office, and the expediency of disposing of so a considerable proportion of the Board's funds at the very beginning of its work. No action was therefore taken in favor of the project.

Fifth. The Committee on Water Supply, etc., was authorized to prepare a preliminary report on the vital statistics of the State as influenced by its topography, illustrating the same with maps, with a view to its publication in the first annual report of the Board, and to expend such a sum as may be necessary for this object, not to exceed two hundred dollars.

Sixth. The committee received and discussed a proposition to adopt an "organ" for the dissemination of sanitary knowledge, in accordance with the provisions of the act establishing the Board. It was finally determined to refer the matter to the full Board for action.

Seventh. The chairman of the Committee on Preventable Diseases was instructed to make a special investigation into the sanitary condition of the mining population of the State, including their habitations, food, labor, habits and prevalent diseases. Said investigation to cost not exceeding one hundred dollars.

Eighth. Other matters have been acted upon by your Executive Committee, all of which have been referred to in the report of the Secretary. A number of bills have been duly audited, as required by the by-laws of the Board.

Respectfully submitted, on behalf of the Committee.

PEMBERTON DUDLEY,
Chairman.

REPORT OF THE COMMITTEE ON THE WATER-SUPPLY, DRAINAGE, SEWERAGE, TOPOGRAPHY, AND MINES.

The Committee on Water Supply, etc., begs leave to offer the following:

Report on the Pollution of Rivers.

[With especial reference to the Schuylkill river, and the cities dependent upon it for their drinking water.]

The following resolution was referred to this committee by the Secretary of the Board:

HEALTH OFFICE,
S. W. CORNER SIXTH AND SANSOM STREETS,
PHILADELPHIA, *July 11, 1885.*

DR. BENJAMIN LEE,

Secretary State Board of Health:

I am directed by the Board of Health to transmit to you the following copy of resolution passed this date.

Respectfully yours, etc.,

WILLIAM P. TROTH,
Chief Clerk.

WHEREAS, The pollution of the rivers of the State, whereby the water-supply of many communities is endangered, is a subject of vital importance, and demands careful investigation;

And whereas, Local governments have not the power to protect themselves against nuisances arising beyond their jurisdiction, and must, therefore, seek protection through a central supervising body, such as the State Board of Health, and in general legislation; therefore, be it

Resolved, That the attention of the State Board of Health be respectfully directed to the general subject of the *pollution of the rivers of the State*, and especially to the pollution of the Schuylkill river, by the dis-

charge of sewage into it from cities, towns, and villages along its banks above the county line of Philadelphia, with the request that the matter receive their early deliberation.

The committee would respectfully report as follows, in accordance with the above request:

The subject of the pollution of the rivers in the State of Pennsylvania is not only one of great importance, but one which it is in the province of this Board to investigate, and it is not only from the stand-point of health that the question needs consideration by the State. Water used for manufacturing purposes, particularly for certain industries requiring a great degree of purity, should likewise be protected from pollution whenever and wherever practicable.

In a country where the pollution is great, where industrial establishments are numerous, and the streams are small, the effect of their pollution will first be felt. These conditions prevail in England more than in any other country, and for the past thirty years it has been necessary for Parliament to take action in the matter. The documents issued detail the troubles and injuries from which the communities have suffered, state the various remedies that have been proposed to mitigate the evil, and give an account of their success and failure. Nowhere else has so much experience been gained on this vital question, and nowhere else can we look as well for guidance in the same. And as our customs resemble those of England more than those of any other country, the experience there gained is to a great measure applicable here.

There are, however, some essential differences which must be realized and considered; differences concerning not so much the sanitary question as the cost. On the one hand, the price of labor being higher than in England, any methods of disposal requiring the aid of much labor will be more expensive. On the other hand, the gain from the manurial value of the sewage or of its sluge, small as it is at the best, would be even less than abroad, because our soil is less exhausted. Therefore, while the sewage disposal in certain English localities may be pronounced not only feasible, but satisfactory, the same methods when adopted here might often be opposed on account of the price to be paid. No price, however, is too great when a community is clearly exposed to a serious pollution of its drinking water. Yet, in order to justify the same, it will be required to show by good evidence that such pollution is actually causing loss of health and of life.

In the United States, the State of Massachusetts has been the first one to feel the need of Legislative enactments regarding the pollution of streams. Their comparative smallness and their double use as sewers and as sources of water-supply has brought the subject into greater prominence than elsewhere. The Blackstone river, receiving the sewage of Worcester, a city of nearly seventy thousand inhabitants, has been turned into a very obnoxious stream absolutely preventing its use for domestic water-supply at any point

below Worcester, and very seriously injuring the many manufacturing establishments along its course. The streams which furnish Boston, and also a large number of smaller towns with water, are partly used as sewers, and have so endangered the healthfulness of the water that a State Commission has been appointed to consider the best means of maintaining its purity. The city of Providence is likewise having its water-supply injured to some extent, and is moving towards applying a remedy.

In Pennsylvania, the time is fast approaching when certain localities will seriouly suffer from the same cause, if such is not the case already. The Schuylkill river now serves the cities of Philadelphia, Conshohocken, Norristown, Phœnixville, and Pottstown with drinking water.

The population and industries of the valley are growing, and this growth will be more increased by the second railroad which has just been opened along the river up to the coal regions near its source. The natural resources of the Schuylkill water-shed, its capacities for mining, agriculture, and manufacturing are such that there can be no doubt that the river will gradually become a great sewer, and as such be unfit to supply water for domestic purposes.

The city of Philadelphia has already accomplished a great deal towards preventing this pollution, as far as its own needs are concerned. The Fairmount Park was established in 1865 to protect the river between the pumps at Fairmount and the Wissahickon creek. The object has been accomplished to a very great degree, but not yet wholly, as much foul matter still enters the river within the limits of the park, particularly at the Falls of Schuylkill. An intercepting sewer, proposed and urged as early as 1868, is at present under construction, and when completed will not only prevent deleterious matter from entering the river within the limits of the park, but also from Manayunk, which lies beyond it, and practically from within the limits of the city.

Three miles above the city is Conshohocken, seven miles above that Norristown, seventeen miles above that Phœnixvilie, and twenty-nine miles above that Pottstown, all using the Schuylkill water for a supply, and also as a sewer into which enter whatever foul liquids escape from the towns. Reading does not take its water from the river, because at times it is highly charged with acids from the mines. Small mountain streams in the neighborhood are impounded and brought to the city by gravity. But the waste waters are discharged into the rivers, and their amount will increase as the sewers, of which few exist at present, are extended over the city.

In the western part of the State, the Allegheny river, furnishing the water-supply for Pittsburgh and Allegheny cities, is likewise approaching a condition when the question of its pollution will become a serious one, which, in part, it is already. Industrial works will multiply along the Allegheny Valley, and the amount of liquid waste products will proportionately increase.

A number of small rivers and creeks are also being turned into sewers, and their number must considerably increase with the growth of the popu-

lation. Some of them do now and others will hereafter serve for water-supply. No argument is necessary to point out the dangers which may result from this indiscriminate pollution of the drinking water throughout the State. The results that may follow it have again been clearly shown in the late typhoid fever epidemic in Plymouth. The question to be determined is how can such disasters be averted.

There are three agencies which can be employed towards accomplishing this end, which singly can affect a great deal, but which together can secure complete safety. These agencies consist in the efforts of the individual, of the community, and of the State. It is clear that much can be done by instructing the people at large as to the dangers of infection and poison in drinking water, and informing them how as individuals they may assist in making them inactive and harmless to themselves and others. In many, if not in most cases, the ability to prevent the spread of disease lies entirely within their own power. It seems, therefore, that one of the directions in which this State Board can act would be to urge the dissemination of such information among the people in a plain and popular way, and in a form forcibly and plentifully illustrated by examples, through the means of the press, the schools, etc.

Communities, such as cities, towns, and villages can, as corporate bodies, effect much good within their own territory by regulating the disposal of all refuse matter, both liquids and solids, in such a way that no pollution may occur. Of foremost importance is the relation between privies and sewers to pump wells, creeks, or rivers from which water is used for domestic purposes. It is a common occurrence in villages and small towns without a water-supply to find shallow privies within a short distance of a deep pump well. In such a case, a poison discharged into the former may, of course, easily find its way into the latter. It is also common to overlook the necessity of disinfecting the discharges and wash-water from diseased persons whereby the poisons may be carried about, either by sewers or in open gutters, to the possible injury of others living near by. The smaller the community, the less the necessity seems to appear to them for joint action in such matters, and the Board can in this direction, by proper suggestions, materially aid them in securing a better sanitary condition.

The third agency which must be brought into action to secure immunity from the danger of water pollution is that of the State itself. Experience everywhere shows in this matter a decided disregard of one community for another situated on the same stream, the water of which is used for domestic purposes. It is only by State power that protection of the injured community can be secured. And it is therefore evident that the State should have the necessary legislation which can prevent communities from polluting the water to be used by others.

The formation of such laws presents some difficulty. It may be that by endeavoring to guard one community from injury, another one is injured to a greater extent, which may in effect result in complete prostration of

its industries. Such cases have occurred, and they are justifiable if the injury to the latter is small compared with the alternative injury to the former. Yet great care and proper discrimination are required so that no tax or penalty is imposed until the necessity is clearly shown to exist.

In order to determine such questions, it should be established what kind of pollution is dangerous to life and health, what kind is injurious only to manufacturing industries, and what kind is simply unpleasant to the senses; for, in the first, case measures could hardly be too strict, while in the last case, State action does not appear necessary. It is impossible, however, to state these distinctions in more than general terms; each case must be inquired into separately, and the decision left to some competent State authority.

All running water, and even rain-water, contains germs, animalculæ, spores and dead organic matter. Yet these need not make the water unwholesome. It is only a particular class of germs or specific poisons which renders it unhealthy. Such poisons are known to exist in the shallow water of swamps where, through its stagnation and other favorable conditions, they are enabled to form, or, in the case of low organisms, to multiply. They are also known to exist in the excreta, in the exudations and exhalations from higher organisms. It is clear, then, that water from swamps, or water into which house sewage or waste water of certain manufactures, as the washings from wool, paper, rags, tanneries, etc., has been discharged, is liable to carry infectious material, and as long as this remains in an active condition, such water cannot safely be used for drinking. It is an unsettled question how far water may run in a stream before such dangerous matter may become innocuous, and this fact can probably never be determined. But it may be said that the greater the dilution, the greater the fall of the stream, and the more tortuous its course, in other words, the more the particles of water are moved about among each other and exposed to the air, the sooner will they regain their purity. While, therefore, drinking water polluted as above is always dangerous, the danger may be reduced or disappear entirely in time under certain conditions which can be determined approximately in each case.

Where the water of streams is not to be used for any other than manufacturing, purposes the standard of purity can be safely reduced. It is extremely difficult, if not impossible, to draw the line in this case, because different industries do not require water of the same purity. This purity is also of an essentially different kind from that which is necessary for health. Water which is perfectly clear and chemically neutral may be poisonous, and muddy water may be wholesome, while for manufacturing the former may be good and the latter unfit for use. In Massachusetts, the manufacturers along the Blackstone and Charles rivers complain that the water is too dirty for some of their processes, and a number of suits have been brought against the State. Efforts are being made by the latter to com-

pass the evils, and there is no doubt that they will be lessened or altogether removed.

All that can be required under this head is that the water-courses used for manufacturing purposes only should be kept reasonably clean, and here again each case will require special consideration with reference to particular industries, and a decision by a competent State authority.

After indicating above what kind of pollution is injurious to health, and that a reasonable purity is demanded for manufacturing purposes, depending upon the class of industry, it should now be stated what disposition is to be made of the objectionable matters, which should be excluded from the streams. It is not the purpose at this time to enter into such a large subject. The same, moreover, has been ably treated in other places, notably, in the reports of the State Board of Health of Massachusetts. The main points only shall here be noted. Where the water of streams is used for domestic purposes, and where its purity must be greatest, it is necessary that nothing which could carry contagion with it should be allowed to enter them without previous purification or disinfection. The methods by which this is accomplished differ materially with the conditions. In general we may state that certain solid organic matters are best rendered innocuous by burning, and that foul liquids may be more or less purified by applying them intermittently to land, or by filtration through the soil, or by a chemical precipitation of the suspended matter. Among the latter methods, the application on land is the best, and its effectiveness is determined by the porosity of the soil, the quantity of liquid applied per square foot, and the period of intermittence. The choice of the particular method will depend in each case upon the quantity and quality of the matter to be purified, on the ground available for the purpose, and on the expense connected therewith.

Buildings in villages or towns having no common water-supply or sewerage should so dispose of their waste matters that none can enter the streams. It is almost always possible to do this with little or no trouble by having a shallow privy as far from the stream as possible, and by allowing the wash water to run into furrows in the garden, which will require occasional loosening and raking of the soil. An underground disposal of small quantities may be effected at no great expense by means of a system of shallow porous tiles laid about one foot below the surface. It is a mistake to believe that sewage can be purified by turning it into a deep well dug down to water level. The ground below this level is simply like a sponge, which takes up water in one place and gives it off in another, filtered to some extent and diluted, it is true, but never purified as it would be if the foul water could drain through the soil near the surface, where it is alternately dry and full of air, and therefore capable of oxydizing the foul water.

In towns having a common water-supply, and therefore a larger consumption, the question becomes more difficult, unless a system of sewers

has been built. In most cases, however, shallow privies and a disposal of waste water on the premises can be made to answer. Where this is not possible, a sewer is the only satisfactory alternative. In the latter case, the disposal of the sewage, if not permitted to run into a stream in a crude state, becomes a matter of common interest for the community, and the method to be applied for purification depends on the conditions presented by the locality. The expense of purification will, in large cities, often justify a very large expenditure in carrying the sewage to a great distance, if by doing so it can be discharged in a crude state. Boston has spent for this purpose four and a half million dollars, London has spent thirty million dollars, Philadelphia is about to spend three quarters of a million for an intercepting sewer from Manayunk to below Fairmount Park.

Where this disposal in a crude state is not available, one or the other of the methods mentioned above, requiring some treatment, must be resorted to, and the question will be more or less complex, according to the local condition presented. The same may be said where purification needs to be only partial, that is, where the streams are not used for drinking purposes, with the difference that less ground and less care will be required, and, therefore, a proportionately small expense need be incurred.

This brief indication of how the objectionable matters which enter the streams should be disposed of shows that considerable difficulties will sometimes stand in the way, and that they will have to be mastered with great care, and consideration of the importance of the particular case and the interests involved. Where the pollution of a stream used for drinking water can be prevented at a reasonable expense, it should not be permitted; but, on the other hand, it would be best to abandon the stream for that purpose where it becomes as expensive to guard its purity as to secure drinking water from another and superior source.

The latter alternative will no doubt in time be adopted in the case of the Schuylkill river. The facilities for supplying all the cities lying along the same with water from the Lehigh and Blue mountains, which can permanently be kept in a pure condition, will eventually cause its abandonment as a source of drinking water, because the expense of keeping it sufficiently pure would be a greater tax upon the community. Until this time arrives, however, much can be done, at a comparatively slight inconvenience and expense, to keep it reasonably safe from dangerous pollution, and there can be no question that the most important and most feasible amendment of the dangers to which it is exposed is the exclusion of excrementitious matter and house sewage.

For the purpose of ascertaining the quality and quantity of objectionable waste matters reaching the river, the Water Department of Philadelphia, Col. William Ludlow, chief engineer, made a sanitary survey of the entire valley,—the most extensive of the kind made in this country. In collecting the material, the territory was divided into several districts, the lower ends of which were just above the principal towns, *i. e.*, Reading,

Pottstown, Phœnixville, Norristown, Conshohocken, and Manayunk. By this means, it was possible to state the amount of pollution above each one of them, which information is therefore valuable to all the cities lying above Philadelphia, and to the State. The report of this sanitary survey, made by Mr. Dana C. Barber, assistant engineer, is appended:

PHILADELPHIA WATER DEPARTMENT,
February 28, 1885.

COL. WILLIAM LUDLOW,
Chief Engineer:

SIR:—I have the honor to submit the following report of a sanitary survey of the Schuylkill valley made by me, under your direction. Its basis is the special preliminary survey made by me in December, 1883, and January, 1884, from which were compiled the statistics of pollution published in your last annual report. The work of this investigation during the past year has consisted chiefly in a more thorough and complete examination of the special sources of pollution, particularly of the large towns, where much time was spent in studying the natural facilities for house-drainage—for few of the towns have any sewers, and none a complete sewerage system.

Nearly all the manufactories in the valley have been revisited, and the first report verified, supplemented, or corrected. Some of the mills in operation at the time of the first inspection were closed on the second visit, while some new ones had started in the meantime, and many had slightly changed their rate of production. But in general there was little change either way, and the drainage arrangements remained in almost every case exactly the same.

The second (last) survey was made in the opposite direction from the first, *i. e.*, going up the valley instead of down, so that, since most of the summer and early fall was occupied in the proposed future supply watersheds and in investigations of the pollution of the Schuylkill within the city, but little was done in the portion above the city until late in the fall, and the field work was not finished till January 20; while some special investigations within the city have been made since that date.

For convenience of comparison, the same method of division and other arrangement is used in this as in the first report. The whole valley is divided into seven districts, each of which ends just above the principal town on the river, generally at a pumping station, as most of the towns draw their supply from the river and above their own pollution.

First, or Pottsville District.

Beginning at the upper end, the first and largest district comprises the whole valley above Reading, having an area of about 657 square miles and a population of about 91,000. This district (which, from its principal town, I have styled the Pottsville district) is naturally sub-divided into

four parts: the Schuylkill proper above its confluence with the Little Schuylkill, the Little Schuylkill, the Schuylkill below the Little Schuylkill, and Maiden's creek. The first two are rough, mountainous regions, containing but little arable land, or any industry other than coal mining.

The principal river pollution comes from the mine water, which contains large amounts of sulphuric acid, and from the drainage of towns that have been built up by the mining industry. According to Mr. Edwin F. Smith, chief engineer of the Schuylkill canal, the acidity of the water has been decreasing since the year 1868, and is, in his opinion, now only about one third of its former strength at Pottsville, on account of the gradual transfer of mining operations to the other side of the mountain, draining into the Susquehanna, though in the last three years much acid has come from the washing of old dirt piles for the recovery of the fine coal.

The largest town in the first or upper district is Pottsville, situated on the right bank of the Schuylkill, about 100 miles above Fairmount dam by way of the river, and 600 feet above sea level. It is the seat of Schuylkill county, the center of trade for the surrounding country, and has a population of about 15,000.

The Pottsville water-works, owned by a stock company, derive their supply from streams on Broad mountain, in the old red sandstone overlapping the coal formation. An impounding reservoir, eight miles north of the town (in west end of Ryan township) and 800 feet above it, with earth dam 35 feet high, covers 70 acres, and has a capacity of about 300,000,000 gallons. Several small streams are taken in on the aqueduct route, so that the exact consumption is unknown. They supply an estimated population of 25,000, including Palo Alto, Port Carbon, and St. Clair, and the collieries and locomotives of the Philadelphia and Reading Railroad Company, and extensive rolling-mills and shops, and estimate the total supply as high as 4,000,000 or 5,000,000 gallons per day. The distributing reservoir, of 6,000,000 gallons' capacity, is not high enough to supply the whole town, and a part is therefore supplied directly from the aqueduct.

The town is favorably situated on quite steep slopes for easy and thorough drainage. Norwegian creek, flowing through the town, is arched over through the thickly-settled portion, and has numerous lateral branches. Probably three fourths of the population has direct drainage for wash water, either by separate sewer connection or through street gutters and inlets. Over 300 water-closets are supplied with the public water, and the secretary and engineer of the water company (Mr. William D. Pollard) estimates that 95 per cent. of them have sewer connection. Probably many houses on the line of the sewers and creek (where it is arched over) have privies over the same, but no estimate of their number was obtained. Almost all houses not near the creek or sewers have good surface drainage, and most of the streets are thoroughly washed into the river by every heavy rain.

Besides the domestic drainage, there are the following sources of pollution in Pottsville:

Coal and Iron Company's repair shops, having privies for 900 men over Norwegian creek.

Pottsville Iron and Steel Company's shops, having privies for 400 men over the same creek.

Ulmer's Packing House, on east branch of Norwegian creek, one mile from the river, employing 30 men and slaughtering 300 hogs and 10 cattle per week, discharging all waste into the creek; using 25,000 gallons of water per day.

Gas works, on Norwegian creek, about seven eighths of a mile from the river. Product from 40,000 to 70,000 cubic feet per day, from naphtha, causing considerable tarry waste.

One large brewery (Yuengling's) and one or two small ones having direct drainage to the river.

Small glue factory just above the pork-packing house, discharges small amount of waste from beef legs.

Small soap works drained by sewer to Norwegian creek.

Within four or five miles of the borough of Pottsville, there is an additional population of 20,000. The principal towns included are the following:

Minersville, four miles west of Pottsville, on west branch of Schuylkill. Population, 5,000; no sewers, but good surface drainage.

Cressona, on same stream, near confluence with Schuylkill, four miles south of Pottsville. Population, 1,500. No public water-supply.

Schuylkill Haven, east of Cressona, on Schuylkill river at head of canal-boat navigation. Population, about 3,000. No public water-supply at present, but water-works in process of construction, to be completed next spring, from streams five miles distant, beyond Cressona, giving head of 235 feet. Small gas-works (supplying Cressona also) and small rolling-mill, but no other special sources of pollution discovered. Good surface drainage for greater part of the town.

Palo Alto, on Schuylkill, east of Pottsville. Population, about 2,000. Water-supply from Pottsville company. Situated on steep banks and has good surface drainage to river. Privies over the river for 150 men in shops.

Port Carbon, on Schuylkill at mouth of Mill creek, two miles north-east of Pottsville. Population, 2,500. Water-supply from Pottsville company. Situated on nearly level ground, affording very little direct drainage into the stream.

The valley of the Schuylkill above Pottsville, extending about 15 miles north-east, or nearly to Tamaqua, is a mining region containing a number of other towns, smaller than those mentioned above, in which there is no special pollution except the sulphuric acid from the coal mines. The valley below Pottsville, as far as Port Clinton, where the Little Schuylkill

enters, is sparsely populated, except in the towns named above, though containing considerable grazing and some farm land.

The valley of the Little Schuylkill is very rugged, and contains no villages of note except Tamaqua, near the head of the valley, twenty miles above Port Clinton and 800 feet above the sea level. It is a mining town of 6,500 inhabitants, with a water-supply from a stream flowing through farming country in old red sandstone, overlapping coal formation. Two storage reservoirs, having combined capacity of over 50,000,000 gallons; consumption not known. The houses are scattered over a small plateau and on gentle slopes to the surrounding hills. The main street is drained by a partly-covered natural water-course in the rear of the buildings on one side and by a private sewer on the other side. Perhaps 50 houses have complete drainage, and one third of the whole population direct drainage for wash water. The only special sources of pollution discovered were a small gas-works and two small slaughter-houses.

The Little Schuylkill apparently brings more acid water than the Schuylkill proper, for while fish are occasionally found in the river above the mouth of the latter, none are found below until it receives the Tulpehocken creek, at Reading, 23 miles distant.

The valley of the Schuylkill between Port Clinton and Reading is a farming and grazing country, containing but few villages or manufactories near the river. Hamburg, on the left bank of the Schuylkill, 80 miles above Fairmount, is the only notable town. It has a population of about 2,500, without a public water-supply or drainage facilities, except an open shale soil over clay, with gentle slope towards the river. The navigation canal intercepts this drainage, as well as that from the farm lands below, and allows opportunity for subsidence before discharging into the river ten miles below Hamburg.

At Shoemakersville, 75 miles above Fairmount, a tannery, which last year used 2,000 hides, 100 bushels of lime, 60 bushels of hen manure and 360 tons of bark, draining into small creek 20 rods from the river, will do nothing this year.

Maiden's creek, entering from the left, about 70 miles above Fairmount, drains a large area of farming country, partly in a limestone region, but though bringing lime-water into the Schuylkill sufficient to remove considerable of the sulphuric acid, (by depositing sulphate of lime,) the river water still remains too acid for fish to live in it.

No special sources of pollution were found in the Maiden's creek watershed, except the following:

Rolling-mill at Maiden's Creek Iron Works, three miles from the river, uses two barrels of oil on the rolls.

Tannery at Trexler station, Albany township, near the creek, 19 miles from the river, used 1,000 hides, 50 bushels of lime, 30 bushels of hen manure, and 180 tons of bark last year, but will do very little this year. Tannery in Grimsville, Greenwich township, near branch of creek, 15 miles

from the river, uses 1,750 hides, 87 bushels of lime, 52 bushels of hen manure, and 315 tons of bark per year.

Tannery in Kutztown, Maxatawny township, on branch of creek, 14 miles from the river, uses 1,500 hides, (estimated,) 75 bushels of lime, 45 bushels hen manure, and 270 tons of bark per year.

Tannery in Berkeley, Ontelaunee township, near the creek, one mile from the river, uses 1,200 hides, 60 bushels of lime, 36 bushels of hen manure, and 216 tons of bark per year.

The *Second*, or *Reading district*, comprising the water-shed from the northern boundary of Reading to (but not including) Maxatawny creek—just above Pottstown—contains about 400 square miles and has a population of about 95,000. It is almost entirely a farming region, containing very few other sources of pollution except from the city of Reading, the largest town in the valley above Philadelphia, situated on the left bank of the Schuylkill, about 60 miles above Fairmount dam, at an elevation (foot of Penn street) of 180 feet above sea level. It is the seat of Berks county and the center of trade for the surrounding country, has extensive iron works, numerous hat factories, and various other lesser industries, with a rapidly growing population, now estimated at 53,000.

The water-works are owned by the city. The sources of supply are small streams from a sandstone region above the town. The total reservoir capacity is about 150,000,000 gallons and the daily consumption about 5,000,000 gallons.

There is only one public sewer in the city, and that merely takes the place of the lower portion of a natural brook, yet on account of unusually good facilities for gutter drainage and the common practice of thus disposing of domestic wash water, probably three fourths of all the waste water of the city passes directly to the river. And, although no water-closet connections with the one sewer or the other natural stream are allowed, it is almost certain that much fœcal matter reaches the river by the following peculiar arrangement: A regulation of the Board of Health requires all privy wells and cess-pools to be dug 20 feet deep, unless rock or water is encountered at a less depth, but does not require them to be water-tight; they are almost invariably walled up with loose stone. Cavernous limestone underlies the city and is within 20 feet of the surface under nearly half of the built-up portion, and fissures are commonly found on or near the surface of the rock. As it has been observed that those vaults or walls which reach one of these fissures do not fill up nearly as soon as others, if at all, such natural outlets are sought in digging privy wells in order to avoid the trouble and expense of cleaning them out. It is, moreover, not unusual to find running streams of water through these fissures, and these are also sought, to a less extent, for natural sewers. These streams come from the hill back of the town, soaking down through coarse sand and gravel at the foot of the hill and coming up as springs in the river bed.

Throughout the city, cess-pools and privy wells are seldom cleaned until they become full, and new wells are sometimes dug instead of emptying the old ones, though this is forbidden by the Board of Health. Of the 9,000 privy vaults and cess-pools in the city only about 520 were cleaned last year. The contents are removed to farms outside the city, at a distance from streams.

The total death-rate of the city was about 18 per 1,000 during the year 1883, and about 19 per 1,000 in each of the three years previous. Nearly one fourth (exactly one fourth, if still-births are excluded) of all the deaths in 1883 were from zymotic diseases, 41 being from scarlet fever, of which 187 cases were reported during the year. During last fall (1884) there was an unusual prevalence of diphtheria, 273 cases and 60 deaths being reported from October 1 to December 6.

The special sources of pollution at Reading comprise two gas-works, five tanneries, one soap-works, several slaughter-houses, two paper mills, one woolen mill, nine hat factories, five breweries, and two malt houses, several rolling-mills and hardware works, besides many others of such a character that the pollution is very slight.

The Reading Gas Company, having works near the canal at the foot of Fifth street, produce from 60,000 to 200,000 cubic feet per day, using crude petroleum—five or six gallons to one thousand cubic feet. This was considered, at the time of my first inspection, (December, 1883,) one of the worst sources of pollution at Reading. Scarcely any attempt was made to utilize or destroy the great quantity of waste which went directly to the river by a pipe under the canal. This waste-pipe leaked badly under the canal, causing much annoyance to the navigation company, whose chief engineer (Mr. Edwin F. Smith) finally devised a method of burning the waste, which the gas company have recently adopted. An old boiler-shell is fitted, in an upright position, to the mouth of the waste-pipe in the river, projecting several feet above the ordinary water level, about 25 feet from the shore. The waste products are thus retained in the iron cylinder and set on fire every day, except when it storms or the water overflows the receptacle, as it had been doing for a week or more at the time of my last inspection (January 16, 1885). The waste then all runs off, and at other times much escapes through a leak in the pipe, so that the arrangement is at present by no means a complete abatement of the nuisance. It is designed to remedy these defects in the spring. I could get no estimate from the superintendent of the quantity of waste which formerly was discharged into the river, but from comparison with other gas-works below, I estimate it to have been over 150 gallons a day on the average—of a thick, black, pulpy matter—or over 250 gallons per day in winter.

The Philadelphia and Reading Railroad Company's gas-works on North Sixth street (on a small stream, about a mile from the river) use naphtha or refined coal-oil, producing about 65,000 cubic feet per week. The waste

from these works is comparatively small, but is sufficient to cause a decided tarry odor several hundred feet away.

At Winter & Goetz's tannery, on the canal, at the corner of Island and Front streets, the waste liquid from treating 120 dozen sheepskins and 25 dozen calfskins per week runs directly into the canal. The principal animal waste comes from soaking the skins in water for two or three days. More or less waste also comes from the use of ten bushels of lime, 200 pounds of salt, and 400 pounds of alum per week, also small quantities of aniline dyes, and a variable number of eggs, sometimes as many as 100 dozen per day. Forty workmen use privies over an earth pit 15 feet from the canal. As the water from the canal enters this vault, considerable pollution probably results.

Ruth & Co., 547 South Fourth street, manufacture glove kid, using 40 dozen sheepskins per week. It is claimed that the only waste discharged into the canal (by separate sewer) is the water in which the skins have been soaked. This is a new factory, started last August.

De Long Bros., Ninth and Muhlenberg streets, tan 5,000 cattle hides and 1,250 calfskins per year, using 1,000 tons of oak and chestnut bark, 200 bushels of lime and 100 bushels of hen manure. The hides are kept in pits filled with water for eight months, the water being changed every day for the first few days, then at gradually increasing intervals—ten, twenty, and thirty days. All waste water (about 4,000 gallons per day) passes directly into a brook, half a mile from the river.

Henry Kerper tans 2,000 hides per year at Second and Chestnut streets, using 100 bushels lime, 60 bushels hen manure, and 360 tons bark. Waste water by sewer to canal.

George F. Winter, at Second and Front streets, tans 1,250 hides per year, but claims to discharge no waste into the sewer. Probably the usual proportion of animal matter reaches the canal by the sewer from Kerper's tannery.

The slaughter-houses of Reading are mostly at a distance from the river or water-courses and drain liquid waste into wells in the earth, so that, unless these have outlets through the cavernous limestone before mentioned, there can be but little pollution from this source. The blood is generally caught and removed with the offal for fertilizer. The principal slaughter-house draining into the river is that of Rader & Thompson, Second and Court streets, on the line of the public sewer. They claim to discharge no waste into the sewer except wash water. A small hog-slaughtering house on Maple street drains blood as well as waste water into the creek close by. The manure pile, which also receives the solid waste, drains into the creek.

In December, 1883, the Reading soap and candle works, W. K. Leman, proprietor, Second and Washington streets, were using 75,000 to 100,000 pounds of grease per year, 27,000 pounds caustic soda, 20,000 pounds sal soda, 350 pounds of rosin, 100 pounds oil of sassafras, and 5 pounds of citronella, producing 150,000 pounds hard soap and 20,000 pounds of candles per

year, and discharging about 7,000 gallons of spent lye (alkali strength 3° to 5°) into the sewer, or 19 gallons per day. At the last inspection (January 16) the workmen in charge said they were not doing more than half as much then.

The lower mill of the Bushong Paper Company, Limited, on the canal at Bingaman and Canal streets, use about 5,000 pounds of domestic rags per day, with 15 bushels of lime, 550 pounds chloride of lime, and 1,900 pounds of wood pulp. All waste matters, including sewage from 60 operatives, discharged into canal; 400,000 gallons water used per day.

Another mill of the same company, on the canal at the foot of Court street, uses 4,000 pounds of rags, 800 pounds of lime, and 450 pounds of chloride of lime. Water-closets used by 35 operatives in this mill discharge into the canal, as well as all other waste.

J. G. Leinbach & Company's woolen mill, on North Fourth street, near Buttonwood, scours 500 pounds of wool per day, and uses 24 pounds soda ash, 31 pounds of rosin soap, 30 pounds extract logwood (liquid), 3 pounds chrome, 3 pounds oil of vitriol, $2\frac{1}{2}$ pounds cutch and, $1\frac{1}{2}$ pounds blue vitriol per day; also trifling amounts of aniline and other dyes.

Hendel, Bro., Sons & Company, Fifth street, below Laurel street, are the largest manufacturers of wool hats in Reading, producing 1,000 dozen a week, or about 1,700 per day. They use about 90 pounds of hard soap, 10 to 15 pounds of blue vitriol, 3 barrels of logwood, and smaller amounts of other dye stuffs and chemicals per day; also scour a little wool—from 50 to 100 pounds a day. The waste water runs 700 feet in street gutter to canal.

It was found so difficult to obtain reliable statistics from the eight other hat factories in Reading that time was taken only to obtain the products, which aggregate (including the one above mentioned) about 10,000 hats per day [average for every day in the year]. The relative quantities of soap and dye stuffs used in the other factories probably do not vary much from the figures given above. Most of them are situated near a creek flowing through the lower portion of the city and the waste water runs to the creek in the street gutters. When not colored by dye-stuffs, the waste water (which I have estimated to be about 300,000 gallons per day) from fulling the hats is slightly soapy and turbid from short wool fibers.

Peter Barbey's lager beer brewery, Hockley lane and River road, produces about 25,000 barrels of beer per year. Waste water from rinsing barrels and vats, and cleaning generally, runs in gutter to canal, two or three hundred feet distant.

The Lauer Brewing Company, Limited, produce about 30,000 barrels of lager beer annually at Third and Walnut streets. Waste water runs through box culvert 500 feet to public sewer. A porter and ale brewery, with malt-house connected, at Third and Chestnut streets, owned by the same company, produces 10,000 barrels per year. Waste runs by special sewer (draining, also, two tanneries mentioned above) to canal.

W. P. Deppen's Spring Garden brewery, Chestnut street, near Tenth, produces 15,000 barrels of beer, porter, and ale per year. A malt-house in the rear, belonging to the same man, produces 25,000 bushels per year. Waste water from both places runs in street gutter a quarter of a mile to a creek entering the river at the foot of South street.

Keller & Schäffer's Keystone brewery, between Fourth and Ash streets, below Elm street, produces about 8,000 barrels of lager beer per year. Waste water by special connection to public sewer.

M. K. Graeff's malt-house, west of Ninth street, below Muhlenberg street, produces 35,000 to 40,000 bushels a year. Water in which grain has been soaked runs to creek near by.

The Reading City Passenger Railway Company's stables, on Miner street, above Willow, occupied by 40 or more horses, have stall drainage by terra-cotta pipe to street gutter, 600 feet from creek near river. No other stables in the city have direct drainage.

William McIlvaine & Sons' rolling-mill, on Laurel street east of Seventh, use 25 barrels of suet and petroleum per year on rolls; drainage into creek flowing through the yard where much of the waste oil is caught and retained till heavy rains. Privies for 150 men over the same creek; only 75 men employed at time of last inspection (January 16, 1885). Several other iron works and rolling-mills cause slight pollution, from the rolls and laborers' baths.

The Penn Hardware Works, on the canal between Spruce and Pine streets, formerly had privy for 200 operatives close to the canal wall, from which most of the fæcal matter entered the river. This was abandoned just before last inspection (December 12) and a new one constructed 120 feet back, over a pit reached by the canal water, hence probably some pollution by filtration.

The Reading Stove Works, Orr, Painter & Company, on the canal between Spruce and Chestnut streets, have privies over earth vaults near the canal; water passes through the intervening earth and removes more or less of the polluting matters; those most used require cleaning every year. Bath water (from 250 men) discharged into canal.

H. S. Getz & Company's marble mills, on the canal, near foot of Second street, have water-closets for 13 men connected with sewer from Lauer's brewery and Kerper's and Winter's tanneries.

Eckert & Company's fire-brick works, on canal just below preceding, have privies over canal wall for perhaps 20 men. [Works closed at time of inspection.]

McHose & Company's fire-brick works, on canal near foot of Fourth street, have privy for 50 men over leaching well ten feet from canal; requires cleaning every two years, but probably causes considerable river pollution.

Besides the above, situated so near the canal or creeks as to permit more or less direct pollution by fæcal matter, the following large establishments

have partial privy drainage through the limestone fissures previously referred to. At the Philadelphia and Reading Railroad Company's machine-shops, Seventh street, between Spruce and Franklin, so much of the privy waste escapes from the vaults that one requires cleaning only once in five years, and the other only once in ten years, though the two are used by 1,000 men. At the car-shops of the same company, Sixth and Centre streets, the privies formerly were self-cleaning, but now are not entirely so. About 850 men are employed here. The spectacle works of T. A. Wilson & Company, Second and Washington streets, are in the cavernous limestone district, and the privies will never require cleaning. Two hundred operatives are employed here where the wash (bath) water goes directly to the public sewers or culvert, with which the privies were at first connected, but afterward cut off to comply with Board of Health regulation forbidding water-closet connections. The cess-pool receiving the drainage of the water-closets at the Philadelphia and Reading railroad depot has a clear outlet to the river, as was shown at the time of its construction, when the full head of a fire hydrant was turned into it for twenty-four hours without filling it.

Tulpehocken creek, entering the Schuylkill opposite Reading, drains a large area of farming country in a limestone region and brings down enough limestone water to complete the reduction of the acid, in part effected by Maiden's creek, so that the water below Reading is generally good (so far as acidity is concerned). Above the Tulpehocken, the Schuylkill water is too acid to be used in boilers. The only special sources of pollution discovered in the Tulpehocken watershed are the following:

Paper-mill of the Bushong Paper Company, (Limited,) near the mouth of the Tulpehocken; uses 5,000 pounds jute per day, with about 800 pounds of lime and 450 pounds chloride of lime.

Van Reed's paper-mill, five miles from the Schuylkill, uses about 2,000 pounds of paper rags and some wood pulp.

Tannery in Bernville, on branch of North Kill creek, 15 miles from the Schuylkill, tans 2,000 hides and uses 100 bushels of lime, 60 bushels hen manure, and 360 tons of bark.

Tannery in Jefferson township above Bernville, 18 miles from the Schuylkill, tans 1,200 hides and uses 60 bushels of lime, 36 bushels hen manure, and 215 tons of bark.

Another in Womelsdorf, Heidelberg township, near the Tulpehocken, about 24 miles from the Schuylkill, does the same amount as the preceding. Both the latter are on very small brooks and probably no pollution reaches the river.

Small woolen mill in Wernersville, Lower Heidelberg township, on Spring creek, about 18 miles from the Schuylvill, scours, perhaps, 12 pounds of wool per day.

The following establishments contributing to river pollution are in the immediate vicinity of Reading:

Cyrus Erence's neat's-foot oil and tallow factory, in Exeter township, four miles east of Reading, receives all the dead animals from that city. During the year 1883, there were 72 horses, 7 cattle, 16 sheep, 104 cats, 54 pigs, besides numerous chickens, geese, etc. The carcasses are boiled to obtain the oil and all the liquid waste runs to a creek nearly seven miles from the river. Bones and butcher's offal are received from other sources, over 100 tons of dry bones being shipped from this place during the year.

Next door to the above is Joseph Levan & Company's glue factory. During the winter and early spring, about 150 tons of beef legs are treated with oil of vitriol (100 pounds a day) and during the late fall and late spring, 200 tons of scraps of hides are used, with one or two bushels of lime to each ton. The establishment is a local nuisance, but comparatively little animal matter reaches the water-course. The proprietor estimated about 400 gallons per day of waste liquid from washing the beef legs and 1,000 gallons of lime water per day from the hide stock. Most of this runs by a small brook to the creek above mentioned.

A mile above on the same creek, Louis Kraemer & Company's woolen mill scours 27 pounds of wool per day, and uses 5 pounds soda ash, 3 pounds bichromate of potash, 40 pounds extract of logwood, 10 pounds chipped logwood, and smaller amounts of various other dye stuffs.

A short distance below the glue factory above mentioned, on Antietam creek, is A. J. Brumbach's cotton and woolen mill, scouring nearly 300 pounds of wool per day, and using over 200 pounds of extract of logwood and smaller quantities of fustic, hypernic, etc. Fifty operatives use privies over the stream.

Opposite Reading, near the river, is G. W. Alexander & Company's hat factory, producing about 700 hats per day, and using a great variety of dye stuffs, generally in small quantities, and in Mohrsville, Cumru township, about six miles from the Schuylkill, by a small creek, are six or seven more hat factories, producing perhaps 3,000 hats per day.

Between Reading and Pottstown, (about 20 miles,) there are almost no sources of pollution except from agriculture. The greatest is at Birdsboro', half way between the two towns, where about 20 houses have indirect wash-water drainage into Hay creek, over which E. & G Brook's nail works have privies for 400 men. Though having a public water-supply (by 12-inch pipe from a small stream one or two miles distant and 170 feet above the town) and a population of perhaps 2,000, this town has no other sources of direct pollution, most of the houses being situated at a distance from the river or any tributary. In the extreme lower end of the second district, just above the mouth of the Maxatawny creek, the Warwick furnace and rolling-mill has privies for 60 men over the stream, though the manager thought that not more than 30 or 40 used them.

The *Third*, or *Pottstown district*, comprising the valley from just above Maxatawny creek to the pumping station of the Phœnixville water-works, an area of about 150 square miles, has a population of about 25,000. The

river valley is narrow between these points, and consists principally of good farming land.

Maxatawny creek, the principal tributary in this district, drains a rougher country with poorer soil and sparse population. Boyertown, partly in this (Maxatawny) and partly in the Perkiomen watershed, has a population of 1,200 or 1,300. It has a water-supply (used by about two thirds of the population) from Ironstone creek, half a mile from the town, half by gravity and half by pumping; consumption not known. The town has but little direct drainage, except into the iron mines which underlie a part of it, whence the filtered water is pumped into Ironstone creek. The following small manufactories of a polluting character are in the Maxatawny watershed:

Small woolen mill at Friedensburg, Oley township, about 18 miles from the river; custom work—perhaps 2,000 pounds of wool per year.

Wren's cotton and woolen mill, in Colebrookdale township, between Boyertown and Colebrookdale station, on Ironstone creek, eight miles from the river; mixed shirtings and blankets, mostly from cotton; uses 15 pounds soap, 1 pound oil of vitriol, and 1 pound cochineal per day, besides small quantity of concentrated black dyes.

G. B. Conrad's "Oley" paper-mill, Oley township, 14 miles from the river, uses about 2,500 pounds of paper rags per day.

Brewery, producing 5,000 barrels a year, on the creek, two miles from the river.

Glasgow Iron Company's rolling-mill and puddling furnace, a short distance above the preceding; uncertain quantity of oil from the rolls passes directly into the stream; privies for 140 men on the bank.

The greatest pollution from this district is from the borough of Pottstown, situated on the left bank of the Schuylkill, just below the mouth of Maxatawny creek, 40 miles above Fairmount dam and 150 feet above sea level. Population, about 5,000, or, including suburbs, 9,000. Seat of several large iron works and center of trade for surrounding country. The water-works, owned by a private company, draw their supply from the river near the lower end of the town. The water is generally considered bad, especially in summer, when most people resort to wells for drinking water. An association of physicians recently urged the water company to take the supply from above the town, but at last accounts this had not been favorably considered. Probably on account of the unsatisfactory quality, the amount supplied is quite small for the population—less than 200,000 gallons per day.

Three natural water-courses through the town drain wash water from about two fifths of the entire population, mostly through the street gutters, and, according to a recent inspection by two resident physicians, (Drs. Kellar and Saylor,) water-closet drainage from over one hundred houses is discharged into two of these streams, one of which is culverted through the built-up portion of its course. The Philadelphia and Reading railroad sta-

tion water-closets also drain to the river. Moreover, the night soil is taken to steep slopes just outside the town, whence much fæcal matter is probably washed into the streams.

The special sources of pollution within the town are few. The gas-works (owned by private company—same owning water-works) produce from 15,000 to 30,000 cubic feet per day from coal; tar sold, and but little waste water to river, except ammonia water. The Philadelphia bridge works, below the intake of the water-works, have privies for 400 men over cess-pools in made ground; probably some river pollution by percolation after high water.

J. Trinley's fertilizer factory, below Limerick station, (about 34 miles above Fairmount,) on small creek one fourth mile from river, grinds 500 tons of bones per year, and mixes the dust with prepared manure; process mostly dry, causing no river pollution; some waste, however, from boiling fresh bones before grinding and from dead animals from the surrounding country. Complaint is made that animals having died of contageous diseases are used there, and the liquid waste drained into the stream, but the proprietor's representative claimed that they were very careful not to take such material. The proprietor sold, in 1883, one thousand tons of fertilizers, mostly in the Schuylkill valley, including 150 to 200 tons of other makes.

At Royer's Ford, a village of 900 or 800 inhabitants, situated on the left bank of the Schuylkill, in Limerick township, 32 miles above Fairmount, a stone culvert under a row of houses on the main street drains wash water from perhaps 20 houses and a dozen water-closets, including that of the hotel. The Spring City Gas Company's works at the same place, near the river, produce about 8,000 cubic feet per day, for the supply of both Royer's Ford and Spring City (on the other side of the river). The gas is made from naphtha, with considerable waste of heavy hydrocarbons. Buckwalter & Company's stove foundry, near the river above the bridge, has one privy over a small stream, used by a dozen men. Bath-tubs, used every day by 70 sweaty men (60 moulders), discharge into the same stream.

Spring City, a village of 1,500 to 1,800 inhabitants, opposite Royer's Ford, contributes but little direct pollution, except from the manufactories named below, the houses being scattered and generally distant from streams. Perhaps one half the population have fairly good surface drainage.

The American Wood-paper Company's mill, on the canal above the bridge, produces about seven tons of wood pulp per day, using 80 bushels of lime, 2,000 pounds soda ash, 2,000 pounds chloride of lime, 100 pounds alum, and a little coloring matter. Seventy-five workmen use water-closets draining into the canal.

Yeager & Hunter's stove foundry, near the canal in the lower part of the village, has privies for about fifteen men over the water.

The *Fourth*, or *Phœnixville district*, embracing an area of about 520 square miles, with 65,000 inhabitants, extends from the Phœnixville pumping station to the upper boundary of Norristown. The main river valley is narrow between these points, and by far the larger portion of the area is

drained by the Perkiomen, entering the Schuylkill from the north, about 25 miles above Fairmount. The source of greatest pollution is the borough of Phœnixville, on the right bank of the Schuylkill, 28 miles above Fairmount and 110 feet above sea level. The population is estimated at 7,500, mostly living back from the river, on both sides of French creek, which thus receives most of the drainage. The water-supply (works owned by the borough) is pumped from the Schuylkill above the town, and is generally considered to be of good quality, except sometimes in winter, when, owing to the peculiar formation of the river just above the pumping station, broken ice accumulates under the surface ice and collects a great quantity of organic impurities, more or less of which are drawn in by the pumps in certain conditions of the river. The consumption is about 500,000 gallons per day. The upper portion of the town, north of French creek, has one arched culvert taking wash water only from perhaps 800 people. The main part of the town, south of the creek, has two natural water-courses, one of which is arched over for a quarter of a mile or more and the other for a short distance. Both receive gutter drainage from a population of perhaps 1,500, besides complete drainage from some 15 houses. A few privies are also placed over the upper culvert near the canal, so that perhaps 150 people have water-closet drainage into the two streams, including the 25 operatives of Griffin, Smith & Company's pottery works on the lower culvert.

The death-rate of the borough, as calculated by a local physician, ranges from 19 to 23 per 1,000, the principal diseases being, in summer, diarrhœa and malaria, and in winter, pneumonia, scarlet fever, diphtheria, and a peculiar affection of the bowels known there as "winter cholera," which may have some connection with the foul condition of the water-supply referred to above.

The most serious special pollution in the town is the privy drainage of the Phœnix Iron Company, which has extensive works along the creek entirely through the town. Eight hundred men use privies over raceways or other arrangements providing direct water carriage to the creek, and 800 more use privies over leaching wells which high water enters by percolation.

The Phœnixville gas works, producing about 12,000 cubic feet in winter from crude petroleum, wastes a large quantity of thick, pulpy matter (said by the superintendent to be eighteen gallons a day) to the river by a special pipe. At the mouth of this water pipe was a large accumulation of viscid tarry matter which had not been carried away by the water at the time of the last inspection, (November 20, 1884.)

No other special sources of pollution were discovered in Phœnixville except two or three small slaughter-houses in the extreme upper part of the town, one of which drains all blood and casts much offal into a small branch of French creek. French creek drains a farming country in which no special pollution was discovered besides a small paper-mill, J. Frederick

Sheeder's, near the southern boundary of East Vincent township, eight miles from the river, producing three tons of binders', trunk, album, and box-board, from old paper rags.

Pickering creek, entering the Schuylkill a short distance below Phœnixville, from the right, also drains a farming country containing a few small manufactories, as follows :

J. W. P. Ingraham's woolen-mill, in Charlestown village, five miles from the river, uses about 2,000 pounds of fulling soap per year in fulling blankets, and about the same quantity of scouring soap ; no wool scouring or dyeing.

John Reese, junior's, paper-mill, near the above, uses about 1,000 pounds of old paper per day during ten months of the year, to make binders' board. Near the above are two lead mines, which have not been worked lately.

B. F. Williams' paper-mill, on small branch of Pickering creek, about three miles from the river, in Schuylkill township, makes about one ton per day of binders' board from old paper.

On the creek, just below the entrance of the above brook, is a small creamery, which evidently gives little or no pollution ; waste liquid (cheese whey) taken by the farmers bringing milk to feed to hogs.

Only that portion of the Perkiomen valley below Schwenksville is included in the present report, the portion above that point being comprised in the proposed future supply water-sheds on which I have submitted a special report, including also the Skippack creek, above Evansburg. There are but few manufactories in this lower portion, and little pollution, except from the farming land which occupies most of the territory.

At Schwenksville, the largest village in this lower portion, about eleven miles from the Schuylkill, a few houses have very imperfect surface drainage to the creek. The only manufactory having any drainage of a foul character is a creamery, from which the amount of waste reaching the creek is very small, most of it being taken by farmers.

At Grater's Ford, nine miles from the Schuylkill, about a dozen houses on top of a steep bank of the creek cast rubbish of various sorts down the bank and about half of them have privies on the bank. Just below the above a small brook enters the creek, which receives, four or five miles above, the drainage of a small tannery near Limerick Square. It uses about 400 hides and 1,200 calfskins, 300 bushels lime, 18 bushels hen manure, and 100 tons bark.

At Rahn's station, eight miles from the Schuylkill, a small fur hat factory, using per day 50 pounds chipped logwood, 3 pounds fustic, 2 pounds oil of vitriol, and trifling amounts of cudbear, hypernic, and other dyes, drains into the Perkiomen, about 800 feet distant, by a small stream which also receives the privy waste from the operatives, perhaps twenty in number.

Casselberry's tannery, at Evansburg, on a small tributary, one mile from the Perkiomen, and seven miles from the Schuylkill, tans 500 hides and

2,200 calfskins per year, using 44 bushels lime, 27 bushels hen manure, and 150 tons of bark.

In the valley of the main river below the Perkiomen are the following sources of pollution:

Palm Paper Company's mill, at Valley Forge, 23 miles above Fairmount, formerly used rags, but now use jute bagging, (old sacks,) 2,700 pounds per day, with 270 pounds wood pulp, 10 bushels lime, 300 pounds chloride of lime, and 75 pounds alum. Water-closets for 14 operatives discharge directly into the stream.

At Port Kennedy station, Upper Merion township, 21 miles above Fairmount, the hotel has privies beside a creek entering at that point, which also receives considerable pollution from the general surface drainage of a population of nearly 500.

Abraham's paper-mill, at Merion station, 19 miles above Fairmount, on Crow creek, near the river, uses 2,000 pounds of old paper per day in making card-board. No chemicals are used in making card-board or binders' board, except copperas, about 12 quarts to the ton.

The *Fifth*, or *Norristown district*, extending from the upper boundary of Norristown to the pumping station of the Conshohocken water-works, is the smallest of the seven, having an area of only 30 square miles, and a population of 20,000. There is no pollution in this district other than from agriculture, except from the towns of Norristown and Bridgeport, situated opposite each other on the Schuylkill, about 16 miles above Fairmount.

The borough of Norristown, on the left bank, has a population of about 14,500. It is the seat of Montgomery county, is a trading center for the farmers for several miles around, especially from the north and north-west, and has considerable manufacturing.

The water-works, owned by a private company, draw their supply from the Schuylkill, pumping continuously for six days in the week from that division of the river flowing to the right or on the farther side of Barbadoes island, opposite the town, in order to avoid the pollution entering that part of the river adjacent to the town above the pumping station. The reservoir, two miles from the river, and 211 feet above it, has a capacity of 12,000,000 gallons. The daily consumption is from 800,000 to 1,000,000 gallons. The quality of the water is generally considered satisfactory.

Two natural streams, Stony creek through the upper part, and Saw-Mill run through the lower, afford good surface drainage for the greater portion of the town. There are also several sewers, as follows: Four-feet brick sewer in Marshall street, from George street to Stony creek, about 1,300 feet, takes only surface water from street gutters, and possibly waste water direct from a few houses, (50 on the line,) probably no water-closets connected. Three-feet sewer in Main street, from Swede street (summit of grade) to Stony creek, about 2,000 feet; perhaps 35 houses connected, a few having water-closets. Also, in same street, from same point, 1,550 feet in opposite direction to river, receiving water-closet drainage of Mill

street station, Philadelphia and Reading railroad, and a few cess-pools; about 90 houses on the line, most of them connected for wash water only. Three-feet sewer in DeKalb street, from below Main street, about 750 feet to mill race, 400 feet from river; about 20 houses, including two or three hotels, and some cess-pools connected; also, water-closets of Pennsylvania railroad station.

Saw Mill run receives gutter drainage from at least 150 houses, in addition to many beside it which drain into it more or less wash water through their back yards, which also contain privies near the banks. An old race from this creek to a flour-mill on the river receives considerable back-yard drainage, wash water, stable washings, etc. Besides the houses on the lines of the sewers to Stony creek, about 200 have gutter drainage to it directly.

I regret having been unable, on account of the absence of any health board or official registration, to procure full and definite statistics of disease and death in this town. According to a local physician, undertakers report 390 deaths during the past year. If there were as many deaths, the rate per 1,000 would be 27, (assuming a population of 14,500,) but the number probably includes some bodies of persons dying elsewhere. Still, I judge the death rate to be very high, especially from zymotic and infantile diseases. One physician reports having attended 50 cases of typhoid fever in 1884.

In addition to the extensive domestic drainage, the following establishments in Norristown drain foul waste matter into the river or its tributaries:

Slemmer Bros.' Montgomery oil works, (for refining petroleum,) in lower end of town, about 1,000 feet from the river, formerly caused much pollution, but in rebuilding, after destruction by fire in November, 1883, greater pains were taken to prevent this. The works were again partially burned in September, 1884. At both times, considerable oil escaped into the river. The waste liquid is now intercepted by six successive traps, (large settling tanks,) from which accumulations are removed to pits, six feet deep or more, 200 feet from the river, and covered with ashes. Beyond the settling tanks, the waste flows a quarter of a mile through ditches and meadows, so that but little oil ordinarily reaches the river. Probably considerable is washed in by heavy rains which clean out the channels. About 2,500 gallons of crude oil is used per day, of which the proprietor thinks not more than one per cent. goes to waste.

Another small oil refinery, some distance below the preceding, had been idle for a long period at both times of inspection.

More oily waste was running into the river from the Norristown gas works, (supplying also Bridgeport,) than from the oil works at the time of my last inspection, (September 22, 1884.) About 30,000 cubic feet per day was then being produced from coal. In the preceding winter, the product was from 75,000 to 80,000 cubic feet per day, and they were then using benzine.

Beener's slaughter-house, between Cherry and Barbadoes streets, has a sewer to Stony creek for liquid waste from slaughtering two or three cattle and ten hogs per week. Two or three other slaughter-houses of about equal capacity, on Carson alley, have a sewer to Saw Mill run, which also drains surface water from an area containing about fifty houses.

Samuel J. Long, hide and tallow dealer, Markley and Lafayette streets, handles 80–100 hides, 280 sheepskins, and 75–120 calfskins per week. The cellar, where these are packed in salt, drains by separate sewer into Stony creek, which also receives much animal matter from the rendering of 25 barrels of tallow per week at the same place.

The county prison, containing about 60 inmates, has a special sewer for all liquid waste to Saw Mill run at Arch and Penn streets.

Bullock's woolen mills on Saw Mill run, about one eighth of a mile from the river, when running on its full capacity, scours 875 pounds of wool per day and uses 66 pounds hard soap, 70 pounds nitrate of iron, 7 pounds iron liquor, 40 pounds extract of sumac, 10 pounds alum, 4 pounds oxalic acid, 85 pounds chipped fustic, and 2 gallons of ammonia; also, irregular and variable quantities of salt, blue vitriol, oil of vitriol, hypernic, Lima wood, madder, chrome, and barwood. At the time of last inspection, the average consumption of wool was said to be only about 215 pounds a day, or one fourth the full capacity, and at that time, only eight workmen used water-closets draining into the creek.

J. & J. Shaw & Co.'s woolen and cotton-mill, on Saw-Mill run, one and a half miles from the river, uses 67 pounds extract logwood, 17 pounds soda ash, 10 pounds oil of vitriol, and 5 pounds cutch per day. The dye water flows several hundred feet through a meadow before entering the stream, and is thereby slightly purified.

J. Morton Brown & Co.'s woolen and cotton-mill, on Barbadoes street, near Airy street, when using wool, scours about 860 pounds a day, with 43 pounds soda ash, and 17 pounds dyers' bar soap. Also, uses regularly, on the average, 43 pounds extract logwood, besides an unknown quantity of chipped logwood and some aniline dyes. Waste water runs in ditch 500–600 feet to Stony creek.

The Washington woolen-mill, near the river, in the upper part of the town, scours 430 pounds of wool per day, and uses 4 pounds potash, $4\frac{1}{2}$ pounds soda ash, $8\frac{1}{2}$ pounds bichromate of potash, 21 pounds blue vitriol, and 75 pounds extract logwood. Waste water runs to river by pipe. Privies for 85 operatives beside a small brook flowing past the mills. Contents said to be removed to farm, but probably some pollution.

M. L. Cresson & Co.'s Ford street mill, near lower end of town, 300 feet from river, uses 10 pounds soda ash, 24 pounds extract logwood, 8 pounds bichromate of potash, and 25 pounds copperas per day. Dye water enters stream from the oil works and runs one fourth mile in ditch to river.

John and James Hunter's cotton-mill, on the river at DeKalb street, has water-closets for 130 operatives discharging into the river, and William

Simpson & Son's Wyoming mills, at the foot of Swede street, have the same arrangement for 150 operatives.

A shirt factory, 600 feet from Stony creek, half mile from the river, uses 1½ barrels of soap, and 1 barrel of starch per day, in washing and starching new cloth. Waste water runs over surface of ground and in small ditch to creek.

The Eagle Iron Works, on the river, in the lower part of town, have privies for 60 men on the river bank. Excrements reached only by high water, but washed in by heavy rains.

James Hooven & Sons' rolling-mill, near the river above the bridge, uses 3,000 pounds tallow and some other grease on the rolls in a year. Sewer to the river for waste water and grease.

Stony Creek rolling-mill, at mouth of Stony creek, uses 1,000 pounds of grease per month; also, 30 pounds of cylinder and engine oil per day. Privies for 150 men on bank of creek. Excrement falls near low water line and is partially washed in by the stream from the rolls, which flows into the creek under the privies.

Scheidt's brewery, Marshall and Barbadoes street, produces 3,000–4,000 barrels of lager beer per year. Waste water by sewer to Stony creek.

The Pennsylvania tack works, on Stony creek, one third mile from river, use 1 gallon oil of vitriol per day, most of which runs into the creek.

The Star Glass Works, near the river, in the extreme lower end of town, have privies for 75 men on the top of the river bank, 75 feet from the water. Pollution only at times of heavy rain-fall.

In the outskirts of the town, one mile north of the center of population, is the State Hospital for the Insane, (South-East district of Pennsylvania,) containing a population of about 1,200. Heretofore the water-closet sewage, amounting to 60,000 gallons per day, has been treated (by precipitation and filtration) for the recovery of the solid fertilizing constituents, which were removed, in the form of sludge, by pumping and gravity, to a distant part of the farm, while the partially purified liquid was discharged into a small branch of Stony creek, together with the remaining 140,000 gallons of waste water, (including all kitchen-sink grease,) to which no purification process was applied. The decomposing organic matter adhering to the sides of the brook as it flowed past the hospital station of the Stony Creek railroad caused an almost intolerable stench at the time of my last inspection, (September 23, 1884.) Arrangements are now being made to utilize the sewage by sub-surface irrigation.

Stony creek, after receiving the hospital drainage and the Norristown sewage from the various sources indicated above, was the most grossly polluted tributary of the Schuylkill in the whole valley above Dobson's run.

In Bridgeport, opposite Norristown, a borough of about 2,000 inhabitants, the houses are scattered, there is no water-supply, and comparatively little domestic waste water reaches the river. About 20 houses along the canal, below the bridge, drain into the canal more or less directly, and most of

them have privies near the canal bank. The principal pollution from the town is from the following manufactories:

Lee's woolen mill, in the extreme lower end of town, scours about 10,700 pounds of wool per day, and uses 2,830 pounds of soft soap, 50 pounds extract logwood, 14 pounds alum, 8 pounds copperas, 8 pounds blue vitriol, 14 pounds chrome, 360 pounds soda ash, 145 pounds sal soda, 3 pounds aniline dyes, and 14 pounds oil of vitriol per day. Seven hundred operatives use water-closets discharging into a stream to the canal.

Worral & Ratcliff's cotton and woolen mill, on canal nearly opposite railroad station, scours 100 pounds wool per day, and uses 50 pounds extract of logwood, 6 pounds blue vitriol, and a small quantity of catechu. Seventy operatives use privies over the canal.

A yarn mill, opposite the above, was scouring 214 pounds wool per day on January 2, 1884. At the time of last visit, (October 2, 1884,) it had been closed for several weeks. The waste water ran through gutter and ditch, 150 to 200 feet, to canal.

Smith's cloth factory, near the canal, in the upper end of town, contemplated starting a dye-house; no pollution at time of last visit, (October 1, 1884.)

H. McInnes' paper-mill, on the canal opposite the railroad station, uses 6,000 pounds of jute butts and bags, (cotton bales, etc., mostly imported,) 850 pounds chloride of lime, the same quantity of lime, and 21 pounds soda ash per day. Five operatives use water-closets discharging into the stream, and 23 use a privy over a leaching vault beside the canal wall.

Dager & Cox's paper-mill, near canal, above De Kalb street bridge, was using 3,430 pounds of jute bagging, 8,000 pounds jute butts, 3,000 pounds chloride of lime, 550 pounds lime, and 31 pounds soda ash per day on January 2, 1884. At the last inspection, (September 29, 1884.) the works were being rebuilt (having been destroyed by fire) with one third greater capacity; jute butts to be used chiefly hereafter.

At J. B. Horn's packing house, on the canal, below the De Kalb street bridge, 7 cattle per week in summer and 100 hogs per week in cold weather (October to May) are slaughtered, and all liquid waste discharged into the canal.

The *Sixth*, or *Conshohocken district*, though a little larger than the Norristown, (38.5 square miles,) has a smaller population, (about 16,000.) It extends from the Conshohocken water-works pumping station to the Roxborough pumping station of this department. The principal pollution is from Conshohocken and its tributaries, Gulf creek and Mill creek.

The borough of Conshohocken, population 5,000 to 6,000, is situated on the left bank of the Schuylkill, 12 miles above Fairmount dam, and 60 feet above sea level. The water-works, owned by a private company, draw their supply from the river opposite the upper end of the town, near the entrance to the upper canal lock, the mouth of the intake being eight feet from the tow-path, and half way between the surface and bottom at ordinary low

water. The reservoir is about 200 feet above the river, and has a capacity of 1,300,000 gallons, which is so large in proportion to the daily consumption (65,000 to 100,000 gallons) that the pump is run only 40 to 60 hours per week, at any time when the water is clearest, except Monday. The pumping-engine boilers are cleaned of scale every three months.

The town contains no sewers, and, on account of the houses being scattered, but little house drainage reaches the river. About 150 houses have more or less direct gutter drainage to the canal, and the Philadelphia and Reading railroad station has water-closets discharging into the same. There is little other pollution, except from the following manufactories:

The Albion print works, below the bridge, between the river and canal, use the following materials in bleaching, dyeing, and printing 40,000 yards of cloth per day: 85 pounds aqua fortis, 200 pounds muriatic acid, 300 pounds oil of vitriol, 28 pounds extract logwood, 390 pounds bar wood, 9 pounds alum, 33 pounds extract citron bark, 4 pounds bar tin, 3 pounds antimony, 195 pounds bichromate potash, 16 pounds blue vitriol, 13 pounds sulphate of copper, 6 pounds catechu, 57 pounds extract sumac, 281 pounds gambier, 128 pounds indigo, 95 pounds indigo auxiliary (zinc powder), 42 pounds brown sugar of lead, 4 bushels lime, 4 pounds litharge, 2 gallons iron liquor, 3 pounds aniline dyes, 6 pounds white soap, 485 pounds soda ash, 83 pounds sal soda, 105 pounds sumac, $\frac{3}{4}$ pound tin crystals, 1 pound yellow prussiate of potash, 240 pounds oxalic acid, 1 pound tartaric acid, 14 pounds aniline oil, 3 pounds chlorate of potash, 72 pounds chloride of lime, and 185 pounds sulphur. Two hundred operatives use privies over the stream or on the bank.

Samuel Fulton's furnace, near the mouth of Plymouth creek, has privies for 200 men over the bank of the creek; excrement reached by ordinary high water. At a small cinder-crushing works, just above the preceding, and owned by the same man, about a dozen men use a privy on the bank of the creek.

J. Wood & Bros.' iron works, (smaller shop,) between the river and canal, just above the bridge, have a privy over a raceway direct to the river used by 20 men.

Alan Wood & Company's Schuylkill iron works, near the canal in the lower portion of the town, waste considerable tar into the canal from their private gas works, which make 2,000 cubic feet of gas per day from rosin and coal. These iron works also use 150 pounds of sulphuric acid per day for one third of the time, and waste some oil from the rolling-mill.

The Conshohocken cottonade mill, just above the preceding, uses 120 pounds extract of logwood, 15 pounds of bluestone, and 16 pounds soda ash per day, besides small quantities of other dyes. Waste water flows through an earth ditch several hundred feet to the canal.

The Schuylkill woolen mills, near the preceding, use 50 pounds extract of logwood, 10 pounds soda ash, 10 pounds bluestone, 12 pounds cutch, and 8 pounds extract of bark per day. Waste water runs through box-

culvert 200 feet, then over the ground 400 feet or more to the canal, being entirely absorbed and evaporated in dry weather.

At West Conshohocken, the houses are scattered, and very little domestic drainage reaches the river. The principal pollution from this point is the drainage of the two following mills:

Bullock's worsted mill, on the river just above the bridge, scours nearly 5,000 pounds of wool and 500 yards of cloth per day, using 400 pounds best suet and tallow soap; also, in the dye-house, 43 pounds sumac, 30 pounds chipped logwood, 13 pounds copperas, and 29 pounds of all other dye stuffs per day. Privies over leaching vaults near the river bank for 366 operatives

James Hall's carpet factory, on a small stream near its mouth, in the lower end of the village, uses 100 pounds chipped logwood, 21 pounds copperas, 14 pounds scouring soap, and 14 pounds soda ash per day. About 3,000 gallons of water from spring on hill used per day in dyeing and scouring. Privies on bank of stream—partly over it—for 43 operatives.

Gulf creek, entering the river just above West Conshohocken, drains the following mills:

Bullock's woolen mill, about one fourth mile from the river, scours 2,000 pounds of wool per day, and uses 820 pounds chipped logwood; also, 55 pounds of other dye stuffs, of which I could not obtain estimate in detail. Privies for 300 operatives partly over pits in the earth and partly over streams—perhaps two thirds directly to the river. Seven tenement houses below the mill have privies over the streams, which had a filthy appearance at the time of my last inspection, (September 19, 1884.)

McFarland's mill, 1½ miles from the river, uses 100 pounds extract of logwood per day, besides smaller quantities of other dye stuffs. Privies for 125 operatives over raceway, direct to the creek.

About three fourths of a mile from the river a dozen houses have privies on the banks—six being near enough to the creek to be reached by high water.

At Spring Mill station, one mile below Conshohocken, seven houses have privies on the banks of a small stream, and about 20 houses drain in wash water more or less directly.

Mill creek, entering from the right, just below Rose Glen station, eight miles above Fairmount, drains the following mills:

Stelwagon's paper-mill, about one eighth mile from the river, uses 1,700 pounds jute butts, 8½ bushels lime, 86 pounds chloride of lime, 130 pounds alum, and 21 pounds rosin per day, when running, and has privies for 14 men over the stream. When last inspected, (September 8, 1884,) it had been idle for some time.

A woolen carpet-yarn factory three eighths of a mile from the river; 15 operatives use a privy on the bank of the stream, reached by high water.

Another mill just above the preceding, which had been idle for a long time, has privies over the raceway, used by 60 operatives when in operation.

At a carpet-yarn factory, one mile from the river, 50–60 operatives use privies over the stream.

W. C. Hamilton & Sons' Riverside paper-mill, on a creek near the river, at Lafayette station, (Norristown branch of Philadelphia and Reading railroad,) nine miles above Fairmount dam, uses about 9,000 pounds of cloth rags per day—cotton and linen worn-out garments, one fifth foreign and four fifths domestic. The foreign rags were from Germany at the time of last inspection, (September 6, 1884.) The rags are boiled under a pressure of from 40 to 50 pounds for ten hours, with 2,200 pounds caustic lime; then washed and bleached with 440 pounds chloride of lime. About one half million gallons of water are used per day. Privies for 100 operatives discharge into the stream. Above the mill, one house has its privy over the stream, two on the bank, and several others near it. This mill is only one and a half miles above the Roxborough pumping station, of this department, and is the worst case of pollution between Manayunk and Conshohocken.

In the upper portion of Philadelphia, on streams entering the river near Shawmont and Princeton stations, several houses drain washwater and cast garbage into the stream, and two or three privies also discharge into them.

The *Seventh*, or *Manayunk district*, comprising all the territory draining into the Schuylkill between Flat Rock and Fairmount dams, or between the highest and lowest pumping stations of the department, has an area of about 75 square miles, and a population of 50,000, of which 20 square miles and 40,000 population are within the city limits. The valley of Wissahickon creek contains almost the whole of the remaining 55 square miles; this is a farming region, with no large villages. The greater portion of the district, even of that part within the city limits, is rural and sparsely inhabited; the bulk of the population occupies a comparatively small territory, chiefly on the steep slopes of Manayunk, and the house drainage of this part of the city, with the manufactory refuse from the extensive mills along the river and canal at that place, and on a small tributary stream at the falls, constitutes the principal pollution. Three special reports on the pollution within this district were made by me during the past year, and published in the appendix to the journal of councils, as follows: On June 21, 1884, a "report on the quantity and kind of solid refuse along the banks of the Schuylkill river, between Flat Rock dam and the Wissahickon creek, (Appendix No. 204, to the Journal of the Common Council;) on July 3, 1884, a "report of an investigation of the sources of pollution of Wissahickon creek," (Appendix No. 210, to the Journal of the Common Council;) and on September 4, 1884, a "report on the pollution of the Schuylkill river, between Flat Rock and Fairmount dams," (Appendix No. 12, to the Journal of the Select Council.)

The present report combines these three reports with additional information obtained from subsequent investigations.

There are three public sewers in Manayunk, as follows: Through Baker street, (from just above Belmont avenue, or Green lane,) to Gay street, to Levering street, to Main street, to the river just below Levering street, with branches up Main and Gay streets, down Cresson street, and down Main and up Grape streets—about 2,600 feet in all; through Lyceum avenue, (from Pechin street,) to Wood street, to Cotton street, to the river, with branch up Mechanic to Cresson—about 3,500 feet; and through Main street, from Robeson to Shurs' lane—about 1,330 feet. Besides these, a private sewer on the course of a natural brook enters the Baker street sewer just above Oak street, and a natural stream along the upper side of Shurs' lane is used as a sewer by several mills, making in all nearly two miles of sewers which discharge into the Schuylkill at Manayunk. These sewers receive not only the street washings and surface drainage from the greater portion of the most densely populated part of this district, but domestic waste water from more than 1,000 houses, (occupied, probably, by 5,000 persons,) either by direct connection or through the street gutters and inlets, (beside many others at such a distance from regular channels that most of the water is absorbed or evaporated,) and water-closet drainage from about 65 houses, including the city police station, with 25 officers and an average of 7 or 8 lodgers, and many liquor saloons, representing a population of probably over 500 persons who have water-closet drainage into the river through the sewers of Manayunk.

In addition to the above number of houses (1,000,) having wash water drainage into the river through the sewers, about 300 drain into a brook entering the canal at the foot of Leverington street, and 100 more into other brooks in the upper and lower portions of Manayunk, and into the river and canal directly.

More than thirty mills or other manufacturing establishments in Manayunk drain into the river more or less completely. About half of them are located on the river bank, and the remainder quite near to it or on small tributary streams. The most common, as well as the most dangerous, pollution from these manufactories is the privy or water-closet waste, which, in more than half of the whole number, (at the time of my last inspection, in August,) discharged directly into the stream. The establishments having such arrangements last summer employ, when running at full capacity, over 2,300 persons. The largest, however, has not been in operation for about a year, and the next largest for six months, while the third largest was ordered by the Court to stop the practice, (and is reported by the Board of Health to have done so,) so that the number of mill operatives having water-closet drainage into the river at the beginning of the year was something less than 800.

After excrementitious matter, the most common pollution is from dyeing yarn and cloth and scouring wool and woolen goods.

The following is a list of the several establishments having foul drainage into the river at Manayunk, with a brief account of each:

The uppermost is the American Wood-Paper Company's mill, situated between the river and canal, about six miles above Fairmount dam. Wood pulp only is made, the following quantities of raw materials being used per day*: 34 cords of wood, (mostly poplar,) 21,000 pounds of lime, 12,000 pounds of soda ash, 4,300 pounds of chloride of lime, and 70,000 gallons of water. The liquid waste—weak solutions of lime, chlorine, and soda, with the juice of the wood—is discharged directly into the stream, and the solid refuse, chiefly waste lime, is dumped on the river bank above the mill, whence much is washed away by high water. The privies are over vaults, (said to be tight,) 75 feet from the canal.

Just below the preceding, are Nixon's Flat Rock paper mills, using 10,0 0 pounds of domestic cotton rags, 16 cords of wood, 10,000 pounds of lime, 1,700 pounds of soda ash, 2,140 pounds of chloride of lime, and 2,000,000 gallons of water per day. All the liquid waste runs directly into the river with no purification. Formerly, the solid waste also was dumped into the river, together with the ashes from 20,000 tons of coal per year, near the evaporating house, some distance below the mills, but since the first of last summer, this solid refuse has been taken to waste land above the mills, between the river and canal, which is reached only by the highest water. The water-closets discharge into leaching brick vaults, about 100 feet from the river. As there is a constant, though slow, passage of water through the ground from the canal to the river, probably some river pollution results.

Next below is a woolen mill belonging to James M. Preston. The principal pollution is from the dye-house, using 137 pounds of extract of logwood, 34 pounds of soda ash, and 34 pounds of blue vitriol per day. Privies for 250 operatives are over leaching vaults within 75 feet of either the river or canal, (some within 15 feet,) so that some pollution of this character is probable.

A. Bacher & Company's cotton mill is just below the preceding. In dyeing cotton yarn, the following materials are used, the waste from which discharges into the river after running a short distance over the earth: $\frac{2}{3}$ pound of anilines, 3 pounds of bluestone, 47 pounds of catechu, 8 pounds of chrome, 3 pounds of copperas, 7 pounds of indigo, 10 pounds of extract of logwood, $1\frac{2}{3}$ pounds of madder, 10 pounds of soda ash, and 3 pounds of sumac per day, besides smaller amounts of other stuffs. Until last fall, the privies used by about 140 operatives were on the river bank, down which the excrements drained, and were washed by rains, causing considerable dangerous pollution. The arrangement was then slightly improved by a vault (not tight) under the privies, and it was agreed to have the contents removed. The ash heaps back of the mill contained much vegetable waste matters, dye stuffs, sacks, and casings, paper rags, etc., until washed away by the winter freshets.

The new mill of John and James Dobson, beside the canal, a short dis-

*Average for every day, (including Sundays.) when running at full capacity.

tance below the preceding, was claimed to cause no pollution last summer. During the winter of 1883–4, it did the dyeing for the "Rock Hill mill," of the same firm, in West Manayunk, using the following quantities of materials per day: 1 pound of anilines, 2 pounds oxalic acid, 3 pounds ammonia, 21 pounds alum, 7 pounds black dye, 77 pounds chloride of lime, 7 pounds bluestone, 11 pounds bicromate of potash, 10 pounds copperas, 2 pounds crystals of tin, 8 pounds camwood, 1 pound extract of quercitron bark, 60 pounds extract of logwood, (solid,) 8 pounds extract of fustic, 4 pounds extract of sumac, 22 pounds extract of indigo, 18 pounds Glauber's salts, 153 pounds chipped logwood, 16 pounds limewood, 22 pounds madder, 2 pounds oil of vitriol, 36 pounds sal soda, and 82 pounds soda ash. The dyeing is now done on the other side of the river, (outside the city,) as will be noted again below.

Just below the preceding is a private corporation gas works, (producing during the winter from 50,000 to 60,000 cubic feet per day for the supply of the mills on the island,) which is the source of some, but apparently not very great pollution. The gas is made from benzine by Professor Low's process, and the superintendent claims that there is no waste. From an inspection of the outlet to the river, it appears to be very small in amount.

Another mill, belonging to James M. Preston, situated beside the canal just below the preceding, has privies for 100 operatives over leaching vaults six or eight feet from the raceway, which causes, without doubt, considerable pollution.

The "Pekin mills," just below the preceding, and the first on the island above the bridge at the foot of Leverington street, are claimed to cause no pollution, the operations consisting simply of weaving, and the privy vaults being 50 feet or more from the canal, and cleaned two or three times a year.

Several mills are located on a natural stream entering the canal just below Leverington street, as follows:

Stafford & Co., Church and Wood streets, manufacturers of blankets and carpet yarns, had, until last summer, privies for 40 operatives over the stream. They have since been removed to stone-lined vaults, at a distance from the stream, but some solid waste—wool dust, etc.,—still drains into the brook above the mill.

Andrew Wilson's packing-box factory had a privy over the same stream, a short distance below, at the time of my last general inspection in August.

At Fitzpatrick & Holt's "Canton Mills," (cotton and woolen yarns,) over the same brook, at High and Leverington streets, the dye-house waste from 267 pounds extract logwood, 47 pounds soda ash, 33 pounds blue vitriol, 17 pounds catechu, 3 pounds chrome, and $\frac{1}{2}$ pound aniline per day, discharges directly into the stream, and previous to last fall the privies for 300 employés were over chutes leading to the same, but since the court ordered this nuisance abated the board of health inspector reports that tight cess-pools have been provided.

Beside the canal, but draining into the river, nearly opposite the mouth

of the above stream, is Stelwagon's paper-mill, another establishment which was charged in court last fall with polluting the water supply. Formerly all waste from this mill, solid as well as liquid, was discharged directly into the river or thrown down the bank, whence it was washed away. This filth was of the worst character, since the product is coarse wrapping and roofing paper, in making which the rags are not boiled, and much coarser, dirtier stock is used than in the other mills above. The raw material consists of three tons of cloth rags, (colored,) nearly two tons of shoddy waste, and over one ton of paper rags. The solid waste dumped on the bank consisted of materials too coarse to be used, as hats, shoes, corsets, mats, &c., shoddy dust too fine to use, and the heavy solids which fall to the bottom of the machines in which the rags are reduced to pulp. The water-closet drainage of 24 men was also allowed to run into the river.

Some time after the order of the court to abate this nuisance the following changes were made: A dusting-machine was introduced, through which all the cloth rags were said to be passed, thus removing much of the dirt which adhered to them only loosely; catch basins were placed in the bottom of the machines to intercept the heavy solid wastes, the waste shoddy dust and other material unsuitable for use was said to be burned in a furnace provided with a blower, and privies were built over a tight vault. Nevertheless, but little change was noticeable in the character of the effluent stream, of which I collected a sample on January 24, and forwarded to Dr. A. R. Leeds, analyst.

Carlyle Greaves' dye-house, a small custom place, just below the preceding, uses about 50 pounds chipped logwood per day on the average, 10 pounds Glauber's salts and unknown amounts of other dyes very irregularly, the waste from which goes directly to the river.

The "Crompton mills," beside the canal, next below, are occupied by J. A. Campbell & Bro., (formerly by Morris & Ott,) cotton and woolen-yarn spinners, having 12 operatives, and using 43 pounds extract logwood, 9 pounds soda ash, and 9 pounds bluestone per day; also, other dyes in small quantities and irregularly; Shaw, Ferguson & Bowen, using same materials, but one third more, and having about 18 operatives; Ripley & Co., weavers, having 53 operatives, but no dye-house; and Watson, weaver, having five operatives. One or two of these firms have dye-houses on the river bank; but the waste water is partially settled and filtered before entering the river, by first flowing into a small basin, inclosed by a stone wall and having an overflow. The water-closet drainage of all the above operatives (88) is discharged into the river. A considerable quantity of shoddy dust and waste material is dumped on the river bank just below the dye-houses, probably from these mills.

George Grebe's blanket mill, opposite the preceding, on the river bank, scours 137 blankets, using 34 pounds of soap and 9 pounds soda ash. All waste, including water-closet discharges from 16 operatives, goes directly into the river.

The "Wabash mill," of James M. Preston, at the lower end of the river road on the island between the river and canal, usually employs about 180 hands in the manufacture of flannels and blankets. When in full operation, between 150 and 200 blankets are scoured per day, with 43 pounds of fulling soap and 7 pounds of soda ash, all waste going directly to the river. Small quantities of mill-waste were dumped on the bank, or into the river, back of the mill, and the operatives' privies were over the raceway, from the canal to the river, at the time of my last inspection, (August 15, 1884.) Since then the Court ordered the cessation of this pollution, and at about the same time the mill was stopped, and has ever since been idle. The medical inspector of the Board of Health reports that no change has been made in the drainage arrangements.

The mills of the Winpenny estate, a short distance below the preceding, have been idle for a long time.

A small quantity of refuse has been deposited on the bank from the "Eagle mill" of Sevill Schofield, Son & Co., between the river and canal, just above the West Manayunk bridge; but there appears to be no regular pollution of note from this place.

The "Ripka mills," (owned by the estate of R. Patterson,) situated on the island between the river and canal, below the bridge to West Manayunk, have been idle since early last fall. It is not known when they will start up. When in full operation, they employ about 500 persons, all of whom use water-closets discharging directly into the river. In the manufacture of ginghams and dress goods, they dye 1,370 pounds of cotton yarn per day, and use for coloring 1 pound aniline dyes, 5 pounds muriate of antimony, 52 pounds catechu, 62 pounds of chloride of lime, 7 pounds chrome, 1 pound copperas, 1 pound fustic, 13 pounds indigo, 3 pounds indigo auxiliary, 19 pounds iron liquor, 19 pounds extract of logwood, 6 pounds madder, 40 pounds oil of vitriol, 19 pounds soda ash, 75 pounds extract of sumac, 21 pounds muriate of tin, and 1 pound tumeric—the waste of all which goes directly into the river.

The river bank in the rear of these mills presents a neater appearance than at any other place at Manayunk. Only ashes are deposited there, and these are leveled, covered with earth, and sodded, year by year.

The City Fire Department Station, on the north side of Main street, a short distance above the West Manayunk bridge, had water-closet drainage to the canal for 12 men until last fall, when a tight well was substituted.

William McMaster's livery stables, on Main street, below Belmont avenue, have partial indirect drainage into the Main street gutter, and thence to the sewer; also a public urinal near the stable office.

Serwazi & Co., bottlers of weiss beer, porter, ginger ale, and mineral waters, at 131 Grape street, wash between 60 and 80 dozen bottles per day, and discharge all waste water into the sewer.

At Taylor Spink's shoddy works, on Crescent street below Gay street, the operatives' water-closets drain into the street sewer, as also small

quantities of dye water. On January 10, 1884, about 20 workmen were employed.

Liebert & Ober's brewery, on Oak street, above Baker street, producing from 35,000 to 40,000 barrels of beer per year, drains into a culvert back of the brewery. A privy for six workmen is placed directly over the culvert. Sixteen dwellings on the same street have privies over the same culvert.

The water-closets at the Philadelphia and Reading (Norristown branch) railroad station at Manayunk drain into the river by sewer, and also the city police station-house, between Cotton and Mechanic, Cresson and Main streets. The latter is occupied by 25 officers and men, and had, on February 6, 1885, an average of 7 or 8 lodgers. The same branch of the street sewer running to the police station-house receives water-closet drainage from several private dwellings on Main street.

The next manufactory below the Ripka mills, above mentioned, is the Schuylkill paper mill, owned by George McDougal, between the canal and river, near the foot of Levering street. On January 12, 1884, the foreman stated that the following quantities of materials were used per day, on the average: 1,700 pounds cotton rags, 3,430 pounds wood pulp, 336 pounds chloride of lime, and 43 pounds soda ash. During the past summer, the mill was not in operation, and the upper part underwent reconstruction. Back of this part, on June 19, 1884, was a pile of old sackings and mattings, rotten rags, etc.,—foul in appearance—containing about 80 cubic yards, and about 250 yards of waste lime, within reach of high water. Back of the lower portion was about 80 yards of waste lime and a large pile, (10,000 yards,) of ashes. At present the reconstructed portion is operated by W. J. Elliot, for the manufacture of manilla wrapping paper. Only jute is used, and this is boiled with lime, so that the river pollution is much less serious than formerly. The following is a list of the average quantities of materials used per day: 6,000 pounds jute, 20 bushels lime, 500 pounds chloride of lime, and 200 pounds of alum. The privy drainage, which formerly discharged into the river, is now retained in dry wells.

Next below is the large cotton-mill of the A. Campbell estate, which has been idle for a year past. When in operation it employs 700 operatives. The most serious pollution is from the water-closet wells or cess-pools, which have an overflow directly to the river. The dye-house waste is more or less filtered by passing through the ash bank behind the mill. The principal pollution from this source is at times of freshet, when the water enters the cellars under the dye-houses and probably removes much of the accumulated deposit. The following list of the principal materials used per day was obtained from the superintendent on January 10, 1884: 7 pounds alum, 2 gallons oxymuriate of antimony, 10 pounds blue vitriol, 68 pounds catechu, 66 pounds chloride of lime, 9 pounds chrome, 11 pounds copperas, 6 pounds fustic, (extract,) 41 pounds indigo, 22 pounds indigo auxiliary, 2 gallons black iron liquor, 52 pounds lime, 7 pounds chipped

logwood, 55 pounds extract logwood, 8 pounds oil of vitriol, 12 pounds soap, 6 pounds soda ash, 81 pounds sumac, (bag,) 34 pounds sumac, (extract,) 15 pounds tallow, and 222 pounds starch. Back of the mill is a long regular bank of ashes, reached by high water, but hardly in the river channel, and above the mill, near the canal, reached only by very high water, if at all, is a deposit of some 70 or 80 cubic yards of chipped logwood.

Sevill Schofield Son & Co. are the largest woolen manufacturers draining into the Schuylkill above Dobson's mills at the falls. At their Economy mills, between the river and canal, just above the lower end of the latter, and on the river side of the canal, and at the Blantyre mills, between Main street and the canal below Cotton street, about 25,000 pounds of wool were scoured daily in August, 1884, with 50 pounds of soap and an equal quantity of soda ash, and all the waste from this process goes directly into the river or canal.

In scouring cloth, the following process of recovering the waste products and keeping them out of the river is employed: The scouring machines are emptied into wooden gutters, through which the waste is washed into wooden tanks in an adjoining room and below the level of the floor of the scouring room. In these rooms, it is treated with oil of vitriol, causing the oils to separate from the pulp, (wooden fibers,) and then put in coarse filtering-bags of matting for removing the water, which comes out quite clear and tasteless. The oily pulp is next placed under presses and the oil extracted, to be used over again in making soap. The mats (waste solids) are taken away to farms for manure. Thirty barrels of oil per week are thus saved and 6,000 pounds of manure. The rinsings of the scouring machines are discharged into the river directly, and this, the proprietor claims, is the only pollution from the process. The solid waste from privies is removed to farms, but the urine is caught in barrels and used in wool scouring. In the dye houses, which discharge directly into the river or canal, the following were average quantities of materials used per day on January 10, 1884, besides smaller amounts of many others: 143 pounds chipped logwood, 85 pounds of extract of logwood, 43 pounds extract of sumac, 40 pounds hypernic, 8 pounds fustic, 11 pounds blue vitriol, 23 pounds oil of vitriol, 12 pounds catechu, 7 pounds chrome, 13 pounds copperas, 2 pounds anilines, 86 pounds soda ash, and 7 pounds scouring soap.

Back of the Economy mills was, in June, 1884, an extensive (artificial) bank of ashes mixed with small quantities of various sorts of mill waste—principally chipped logwood and other solid waste from the dye-houses, and teasels, (burrs used in dressing woolen cloth,) with wool clinging to them, also small quantities of wool-dust and rags. But these were washed away, apparently by the winter freshets, and the bank at this date is nearly free from organic refuse, except some old lumber, which is to be burned. A small quantity of tin scraps, old oil-cloth, old hats, shavings, etc., was found in June beside the abutment of the tow-path bridge, just below the Econ-

omy mills, but probably dumped there by others than the mill owners. They were removed during the winter, probably by high water.

A small cemetery above Cresson and Penn streets is favorably situated for drainage into the river through the street gutters, being on a side hill and having its lower sides cut down for street and railroad, and unprotected by sod.

Below the lower canal locks, on the river bank, is J. D. Heft & Son's yarn mills. A little scouring is done, but the principal pollution is the sewage from 60 operatives, and the dye-house waste from 177 pounds of extract of logwood, 67 pounds of soda ash, 50 pounds catechu, 43 pounds indigo, 26 pounds anilines, (principally scarlet,) 17 pounds bluestone, and between 100 and 200 pounds per day of other dye stuffs. [Average quantity per day in January, 1884.]

The mill of David Wallace & Son, just below the preceding, when visited on January 12, 1884, was said to scour a little wool—33 pounds a day—and do some dyeing, using 35 pounds of extract of logwood, 17 pounds blue vitriol, and small amounts of other dye stuffs. The waste from both of these processes goes directly to the river.

The four following mills on Shur's lane drain into the river through the street gutter or natural streams which are covered in the lower portion:

Rice & Bean, manufacturers of woolen spun-yarns, on the north-west side of Shur's lane, above the railroad, dye about 1,000 pounds per day, using 96 pounds of extract of logwood, 14 pounds soda ash, 14 pounds blue vitriol, 1 pound chrome, and small quantities of anilines. All sewage, including excrements from 30 operatives, goes to the river, (about 800 feet,) by a culvert having a steep grade. [Last inspection in August, 1884.]

Morris & Ott have recently started a new mill just above the preceding, but it is not yet fully in operation. Privies for 19 operatives are over the same brook above mentioned, but it is designed to dig a vault as soon as the spring opens and abolish the old arrangement.

J. Leach & Bro., manufacturers of cotton and woolen goods, on the north-west side of Shur's lane, about one third mile from the river, dye 600 pounds of cotton per day, using 70 pounds of extract of logwood and a little chipped logwood, 18 pounds vitriol, and 17 pounds soda ash; also 7 pounds catechu per day for three months in the year. About 100 operatives are employed, all of whom use privies over a well receiving roof water, and having an overflow to a small brook. The dye-house waste runs in the street gutter most of the way to the river. [Last inspection in August, 1884.]

T. Kinworthy & Bro., just above the preceding, scour 1,540 pounds of wool per day, using 46 pounds of soap and 13 pounds of soda ash. The waste water from this process runs in the street gutter most of the way to the river. Privies for 80 operatives are over the same stream as the preceding.

Flanigan's (Freeland) mills, (spinning,) above the preceding, give employment to about 40 operatives, who use privies over the same brook re-

ferred to above. Just above the mill, considerable quantities of waste material—short fibers and dust—partly rotten, have been deposited on the banks of the brook, into which more or less of the foul matter is washed by every rain. [Last inspection in August, 1884.]

The "Albion dye works," (G. J. Littlewood & Company,) on Main street below Shur's lane, is a large custom dye-house, coloring about 5,000 pounds of cotton and some wool, and using 600 pounds of liquid extract of logwood, 200 pounds of catechu, and 2 pounds of aniline dyes per day, liquid waste from which goes directly to the river. The dye-tub sediment—said to be about only one cubic yard per year—is dumped on the bank; also, an unknown quantity of dye-stuff casings, mats, and sacks. About 7 cubic yards of the latter, which had been dumped over the river wall opposite the works, remained above high water on June 19. Probably much had been washed away by high water.

The superintendent of the city gas works, just below the preceding, claimed, on June 20, 1884, that no waste entered the river from the works when in operation. (At that time the gas was pumped from the city.) Nevertheless, after the works were started again in the fall, a considerable quantity of tarry matter was found to be running into the river under the corner of Hey's mill, opposite, which undoubtedly came from the gas works. In the summer, a large pile of waste lime remained on the river bank opposite the works, more or less of which was washed in by heavy rains, which also wash out old deposits of coarse waste products of a tarry nature which have been buried in the bank.

Below the gas works, on the same (N. E.) side of Main street, is A. Platt & Bro's. cotton and woolen yarn mill. Liquid waste from dye-house (using 130 pounds logwood, 60 pounds catechu, and 3 pounds aniline dyes per day) runs in the street gutter a short distance to the sewer inlet.

Opposite the above, (on the river side of Main street,) is Richard Hey's "Progress mills"—woolen yarns. The waste from scouring 257 pounds of wool per day, with 4 pounds of soda ash and 21 pounds of soap, goes directly to the river. The dye-house waste water (from 17 pounds chipped logwood, 2 pounds aniline dyes, and a little catechu) is partially filtered by flowing through the cellar wall. The privies for 90 employés are on the river banks, and are reached by high water.

Just below Platt's mill is J. P. Holt's cotton yarn mill, having a sewer direct to the river, taking water-closet drainage (50 operatives) and liquid waste from a dye-house which was using, on January 12, 1884, an average of 17 pounds chipped logwood, 17 pounds soda ash, 17 pounds blue vitriol. 3½ pounds aniline dyes, and 7 pounds catechu per day.

The following, in reference to heaps of refuse on the river bank near this point, is from my report of June 21, 1884:

"A short distance below Richard Hey's yarn factory is a large and rapidly increasing pile of ashes and other refuse, extending more than sixty feet into the river bed. This is open to the street, and is a common dumping

ground for those manufacturers who have not a convenient place adjacent to their own premises, and for oyster dealers and the street-cleaning contractor for that district. The largest pile contains, approximately, 7,000 cubic yards, principally coal ashes, but with large quantities of oyster shells, wool and cotton dust and waste, and many other kinds of refuse. Below this is a long and narrow pile, beside the street, containing about 350 cubic yards of oyster shells, wool and cotton waste, etc. All this refuse has been deposited within five years. Near the upper end of the large pile are two or three small wooden buildings where Coates, Mills & Company manufacture cotton and woolen waste (for cleaning machinery and for packing boxes) from refuse cotton and wool from the mills. From this process results about one half cubic yard per day of short cotton and wool fibers and dust, which is dumped down the ash bank toward the river. This establishment has been in operation only fifteen months. J. P. Holt (cotton mill, just above) dumps ashes here—about one half cubic yard per day—about four cubic yards of sediment from dye-tubs during a year, and an indefinite (small) quantity of mill waste of various sorts. One of the employés of John Anderson, street-cleaning contractor for the Twenty-first district, stated that about fifteen cart-loads per day of street sweepings were dumped here regularly. A part of the ashes from the Albion dye works, (G. J. Littlewood & Company,) amounting in all to about two cubic yards per day, is dumped here, and about one cubic yard per year of dye-tub sediment; also, during the winter, one cubic yard of ashes per day from A. Platt & Bro's. mill, and small quantities of shoddy waste."

Shortly after the publication of the above, notices were posted at this point forbidding the deposit of refuse along the highway, and the street-cleaning contractor stopped dumping here. But deposits of mill waste and other refuse continued to be made on the great dump below Coates, Mills & Co.'s works, and are apparently still made at this date.

"A heap of refuse dumped over the river wall opposite the Albion dye works contains about 17 cubic yards of dye-stuff, sacks, and matting, together with small refuse, sweepings, etc. Probably the greater portion of this will be washed away by the next high water.

"Just below Richard H. Patton's machine-shop, at the foot of Shur's lane, is another common dumping ground for ashes and refuse from the neighboring mills, oyster shells, etc. The pile here contains about 650 cubic yards, mostly ashes, with a few yards of cotton and woolen-mill waste, oyster shells, etc."—(Report of June 21, 1884.)

On Main street, (the river road,) a short distance above Wissahickon, are the "Enterprise mills" of Hutchinson & Ogden, manufacturers of woolen yarns. One thousand pounds of raw wool are scoured here per day, with about 45 pounds of soap. All the waste from this process goes direct to the river by drain under the street. This is claimed to be the only pollution. The privies are over dry wells not connected with the

river. On the river bank was (in June) a small pile of refuse—teasels, yarn, sheet-iron, etc.

A small brook entering the river a little way above this mill drains a small slaughter-house (two or three cattle a week) situated near it, about eight hundred feet back from the river. The liquid waste runs through small piles of manure, one close to the stream.

At West Manayunk, (Montgomery county,) the principal pollution is from the four following mills:

Dobson's "Rock Hill mill" is the highest, on Gully run. The principal waste here is from cloth-scouring or fulling, and this is treated with chemicals, precipitated and partly filtered, before being turned into the stream, in order not to render the water unfit for the use of the paper-mill below. The manager claimed on January 7, 1884, that all the privies were over wells, the contents of which were removed to farms, but I saw one over the stream, in use on August 11.

A short distance below, or a quarter of a mile from the river, on the same stream, are the "West Manayunk worsted and woolen-mills," of Schofield, Mason & Co., having one hundred and ten operatives, all of whom were using privies over the stream on August 11. The waste from scouring 857 pounds of wool per day, with $8\frac{1}{2}$ pounds of soap and a little soda ash, is carried by pipe to below the dam of the paper-mill. Above the mill is a large heap of rotting wool or cotton waste on the bank of the stream, and below it ten houses drain in wash water, and six have privies over the stream.

The "Ashland paper-mill" is near the mouth of the same stream, into which it drains all liquid waste from the usual treatment of 4 cords of poplar wood and 430 pounds of old newspapers, with 1,666 pounds of soda ash, 733 pounds of chloride of lime, and 3,000 pounds of lime. There are eighty operatives, one half of whom use privies over the stream. The waste lime is dumped on the bank at the mouth of the brook and much is washed away. The pile remaining in June contained about 1,600 yards, which was being increased at the rate of more than 2 yards per day.

A short distance below is an old mill, now used by the Messrs. Dobson as a dye-house. The quantity of materials used is probably at least twice as great as the list given above as having been used in January, 1884, at the mill in Manayunk, since the latter mill has been started in the meantime. The appearance of the stream from this place as it flows down the river bank is very filthy—much resembling that at the falls, though not so extensive. Opposite the above is a small cotton-waste factory belonging to H. Dougherty, from which small quantities of shoddy dust and some coarser material are dumped on the bank close to the water.

A short distance above the paper-mill was a hog-yard, containing in June about 25 swine, on the river bank; but this had been abandoned before the August inspection.

Two houses near the railroad, just above West Manayunk station, have

privies over a small brook to the river. A few other houses above here drain wash-water and cast considerable refuse down the river bank.

Along the bank below here there are only small piles of ashes from the houses on the river road, and a little other refuse. The presence of the canal tow-path on this side prevents any considerable deposit directly on the river bank.

A considerable portion of West Laurel Hill cemetery is favorably situated for drainage into the river, by reason of the stream that flows along its lower side. At the foot of this stream are the Pencoyd iron works, from which the pollution is very slight, but about twenty tenement houses back of the works, beside the stream, discharge all waste water and small garbage directly into it; the privies are also near it, and probably give considerable pollution by filtration.

On a stream entering above the cemetery, and draining the upper side, is a small mill having a dye-house, but the pollution from it seems very slight.

Above the iron works, about one hundred houses on or near the river bank—most of them on the opposite side of the road running along the river—discharge more or less waste water and garbage into the river or on the bank. About half a dozen have privies on the bank, but all are so high as to be reached, if at all, only by the highest freshets. There are about the same number of small stables, with manure heaps draining down the bank.

The following in regard to "Riverside Mansion"—a day resort and stopping place for teams passing from the East Park to Wissahickon drive, having grounds bordering the river just above the mouth of Wissahickon creek, and containing the upper landing of the Fairmount and Wissahickon steamers—is from my report of September 4:

"This resort is extensively patronized on hot summer days, sometimes by more than six hundred people in one day. Not only does all wash and waste water from this place go directly to the river by pipe, but also the waste from the men's urinals and water-closets. This place is only about two and one half miles above the Belmont pumping station, supplying West Philadelphia, and three and one half miles above the Spring Garden station, supplying the largest portion of the city proper. In view of these facts, and of the probable manner of life and habits of the people frequenting this resort, the home surroundings of many of whom are probably very insanitary, thus impelling them to such a place, especially in the first stages of illness, and the facility with which the germs of zymotic diseases are transmitted by drinking water, it seems to me one of the most dangerous sources of pollution within the limits of this investigation."

The proprietors of this place, Messrs. G. & C. Soulas, were afterward convicted of maintaining a nuisance, since which the medical inspector of the Board of Health reports that a well or cess-pool for water-closet drainage has been made.

The investigation of the sources of pollution of Wissahickon creek was made chiefly between June 24 and July 3. The information was obtained by a personal inspection of the creek from very near its source to its mouth,—following the main stream, on the banks or by the nearest road, noting the appearance and taste of the water in most of the tributaries, however small, and going up such as showed evidences of pollution, or on which it could be learned that there were any special sources of contamination.

Above Ambler station, (North Pennsylvania railroad,) in the west end of Upper Dublin township—about ten miles from the source and twelve from the Schuylkill—no special sources of pollution were discovered except two creameries, one at North Wales and one at Spring House. The former is quite small and at a distance from the creek, and probably most, if not all, the organic matters in the small amount of waste liquid are oxidized by flowing through the meadows. That at Spring House (Gwynedd township) is beside a small stream flowing into the Wissahickon, one and a half miles below. This does a large business, (8,000 to 9,000 pounds of milk per day,) but the proportion of waste is unusually small, since the cheese whey is run into a tight well and thence pumped out and removed by farmers. About the only waste entering the stream is the rinse and wash water, and this contains so small an amount of milk and cream as to give little or no offense in the brook a few rods below the point where it enters.

Farm lands border the creek and its tributaries throughout most of its length above the city, but near the sources the soil is not so highly cultivated, so that there appears to be little pollution from fertilizers in that portion.

Considerable grazing land appears in the upper portion of the water-shed, and trees and bushes are allowed to grow along the stream more than in the lower portions. The earth consists largely of "red shale," causing a very muddy condition of the water after heavy rains. Even after long absence of rain the water is not clear, having a clouded, milky appearance when seen in a glass. The course is quite winding, and the bed broad, making a shallow and somewhat sluggish stream in summer. Brown *algæ* cover the rocks which appeared to a greater or less extent in the bed at most of the points examined. Still, the taste of the water continued quite pleasant as far down as the eastern corner of Whitpain township, where a small branch draining the vicinity of Ambler station enters.

This stream receives the drainage of a tannery, a hotel stable, and the hotel and railway station water-closets. The tannery, owned by A. D. Faust & Sons, is located about three quarters of a mile above Ambler station, and a little over a mile from the creek. About one hundred hides per week for the most of the year are tanned here; also, about two hundred dozen calf skins during the year. The hides are mostly from Philadelphia—from Western cattle slaughtered here. Animal matter from the hides is deposited on the bank all the way to the village, (three quarters of a mile,)

causing an unpleasant order (noticeable only a few feet from the stream) in hot, dry weather. The bed of the stream is also blackened by the action of the bark liquid in combination with the lime used in the process of tanning.

Between the tannery and the railway station, one private residence drains into a loose rock-lined cess-pool on the bank of the stream, and two or three other houses drain wash water into it more or less directly—generally over the ground for several rods.

The hotel stable (Godfrey's) and privies are built over this brook, and drain into it directly. The proprietor claims that there is not usually more than one horse in the stable, and that the summer population of the house does not exceed fifteen. The North Pennsylvania station at Ambler also has its privies over the stream.

The chemical works of Keasby & Mattison, situated near Ambler station, are the sources of the most extensive pollution of the Wissahickon above the city. Their principal products are sulphate of quinia and carbonate of magnesia; also, a few iron salts, bromide of quinia, etc., and the waste principally sulphate of soda (average 350 pounds a day) and a smaller quantity (10 to 25 pounds) of carbonate of soda, carried away by water, of which about 150,000 gallons per day are used on the average. Carbonate of lime, (3,000 pounds a day,) another waste product, is dumped in out-of-the-way places, frequently beside the streams, but as this is nearly or quite insoluble, it does not affect the water. The waste water, containing the sulphate and carbonate of soda, runs in an open ditch about eight hundred feet to a small meadow brook, from which it overflows considerable pasture land on the way to the Wissahickon, about two thousand feet further, the vegetation in its course being largely destroyed by the carbonate of lime.

At the mouth of the brook, a rough gauging showed an approximate flow at the time of the inspection of 100 gallons per minute. At this point the Wissahickon is divided into several channels, into the smallest of which the brook from the chemical works empties and flows for half a mile, very sluggishly, in a muddy bed obstructed by weeds, before entering the main stream. Yet the peculiar taste is quite perceptible in the main stream some distance below, even at times of quite high water.

Below Ambler the farms are more highly cultivated; large herds of cows and horses are occasionally seen in pastures beside the streams, a few farm-houses are situated quite near the creek, causing some pollution from the washing of yards by heavy rains, and one or two privies were seen on the bank; but no serious pollution was discovered above the city limits. Limestone is quite common through Whitemarsh township, and kilns are frequent near the creek.

The most offensive and apparently most serious pollution comes from within the city limits, and considerable even from the park. Near the right bank of the stream, just within the city limits, is a Catholic seminary for young ladies, called "Mt. St. Joseph's Academy," which had the following drainage arrangement as late as October 31: All water-closets

and baths for a population of about 130 drain into a tight cess-pool having no ventilation except through an overflow to the creek—about 1,000 feet distant. This cess-pool was built two years before and had never been cleaned. The drain from the kitchen sinks entered the cess-pool overflow pipe. The bed-room basins discharge into a separate pipe running to within 50 feet of the creek, beyond which point the water runs in an open ditch. Thus all liquid waste entered the Wissahickon.

Four hotels on the park drive along the creek, viz: Indian Rock hotel, Valley Green hotel, Maple Spring hotel, and Nippin's Wissahickon hall drain all wash and waste water directly into the creek, and two—the Valley Green and Maple Spring—have privy drainage. The particulars of the pollution from these houses are as follows:

"*Indian Rock hotel*"—Pipe drain to creek takes all liquid waste, including that from urinals; much refuse dumped on bank—old shoes, oyster shells, matting, broken bottles, brooms, paper, tin, etc.; chicken coops, dog kennels, and hog yards (five swine) on bank; also, large manure pile, unprotected; feathers from picking fowls scattered over bank.

"*Valley Green hotel*"—Privies over a little brook, nearly dry most of the time, but excrements thoroughly washed into the creek by heavy rains; hog-pen and chicken-house near the above brook; all sink and waste water directly to the creek, washed in by overflow from watering trough; oyster shells and other garbage on bank of creek; unprotected manure pile and chicken coops near top of bank.

"*Maple Spring hotel*"—All wash and waste water direct to creek by small brook running under privies and washing in all excrementitious matter.

"*Wissahickon Hall*"—All wash water direct to creek; much kitchen and restaurant garbage—lemon skins, oyster shells, etc.,—on bank of brook, entering the creek above the house.

"High Bridge Mansion," on Ridge avenue, near the mouth of the Wissahickon, was said to drain all liquid waste, including that from urinals, into the creek through a 15-inch pipe sewer; this discharges some distance above ordinary low water level and causes noisome odors in hot weather.

"The Wissakickon," a very large new hotel near the Chestnut Hill branch of the Pennsylvania railroad and Springfield avenue, has a complete drainage system connected with the creek. The sewage is first received by settling-basins, from which the liquid portion runs through about 2,000 feet of tile pipe to a small tributary of the Wissahickon creek. Although this house has been open only a short time, the discharge at the mouth of the sewer was quite offensive; the sewage probably contains much organic matter. [Since the above was written, work has been commenced on a sub-surface distribution system, which will probably mitigate the evil.]

After the above, the worst pollution within the city limits is on Cresheim creek, (tributary of the Wissahickon.) Near its source, it receives considerable pollution from several houses on Germantown avenue, just

above the crossing of that street, chiefly the washing of filthy back yards. One privy with loose stone vault is directly on the bank of the stream, and two others have open ditches (about 60 feet long) running to the brook to drain off the excess of liquid matter. Clark's Mermaid hotel, Germantown and Mermaid avenues, discharges waste and waste water into this brook.

On Cresheim creek, below Germantown avenue, is a shoddy mill owned by David Hey. The process is a dry one, tearing up carpet rags and spinning carpet yarn; but large quantities, 200 to 300 pounds a day, of light dust and short wool and cotton fibers, very dirty, are dumped back of the mill beside the creek, on a pile now amounting to about 40 cubic yards. The grounds about this mill are very filthy, and several houses contribute much pollution to the stream, three having privies with shallow, loose stone vaults close to a small tributary of the creek, and throwing kitchen waste near the banks. A privy for the mill operatives is also situated on the bank of the creek, the vault being of loose stone and probably reached by high water; many geese and ducks swim in the pools near the mill. The same man is about building another mill (to tear up carpet rags) below the preceding, under the Chestnut Hill branch of the Pennsylvania railroad. Two houses near Old Mill ruins below Thirty-fifth street, on Cresheim creek, have privies directly over the water in the pool, and three or four others on the banks, very near the water.

On a small creek entering the Wissahickon at Gorgas lane, are two small dye-houses, that of Carmany & Boone, situated just outside the park boundary, being the largest. About 1,800 pounds of cotton per day are dyed here, (mostly brown and black,) by logwood and catechu; about 85 pounds of the former and 100 pounds of the latter are used per day. They also dye some blue and violet.

A. M. Haley & Bro., a short distance above on the same stream, dye about 1,000 pounds of cotton per week. But little information was obtained from the latter, but they appeared to use a larger proportion of bright color than the firm below. Both places discharge their waste water directly into the stream; this colors the stones and bottom of the bed, producing the appearance of colored water even when it is quite clear.

Some pollution comes from dwellings near Rittenhouse creek and its smaller tributaries, the most serious being from five hog-pens near the bank below Wissahickon avenue. A large quantity of green water that had apparently been stagnant a long time was being pumped from a quarry near the same place at the time of the inspection.

Along the bridle-path on the lower Wissahickon, much kitchen refuse is scattered by picnic parties, and most of it probably goes into the creek; also the washings from the drive and much other foul refuse not apparent in an inspection covering so short a time. Probably dead animals are sometimes thrown into the stream, but none were discovered. A considerable portion of Ridge avenue, on either side of the Wissahickon, has gutter drainage into the creek, but the amount of house waste water dis-

charged into the gutters is not sufficient to keep up a constant stream; however, much solid matter is deposited and washed in by the first heavy rain.

Below the mouth of the Wissahickon, the park borders the river on both sides all the way to Fairmount dam, and the polluting matters entering this lower portion are, for the most part, brought in by small tributary streams.

Powers & Weightman's chemical works, near Ridge avenue, above the Falls bridge, have an independent sewer to the river which carries, along with considerable condensed steam, small quantities of chemicals. The principal products of the works are alum, oil of vitriol, green vitriol, (copperas,) and tartaric and citric acids. The superintendent claimed that the only waste was from the rinsing of carboys, and an occasional breakage of a carboy. This information being unsatisfactory, I collected a series of six samples on July 21 and 22, from the mouth of the sewer, and forwarded them to Dr. A. R. Leeds, of the Stevens Institute of Technology, for analysis. Three or four dwelling-houses, on the lane leading to the upper works, drain waste water into the stream flowing to the river. The new quinine works above the preceding, near School lane and the Norristown railroad, were found to have practically no drainage to the river.

At the foot of Mifflin street, Falls of Schuylkill, a small natural watercourse enters, bringing the wash water drainage from about 155 houses below the Norristown railroad quite directly—generally over the sidewalk to stone gutters, or through wooden drains—and many others less directly, where water runs over the ground for some distance in no regular channel, as, for example, from ten houses on the east side of James street, just below the Norristown railroad, from the rear of which the ground has a steep slope to one branch of the brook about 100 feet distant, the privies of these houses being situated on the extreme edge of the bank, down which are thrown much garbage and waste water. Such conditions permit river pollution only during and shortly after heavy rains. An ice pond, just above the railroad on the same branch, serves as a swimming-bath for many small boys in summer, and just above it are two stables and a hog-yard near the stream, and draining into it more or less completely.

One brewery, (J. Stein's,) having a yearly product of 2,500 barrels, drains into this brook, and another when in operation, but not now running. From just above the railroad, a short distance above these breweries to Ridge avenue, this brook runs under ground through a culvert or sewer. Stein's brewery had a privy over this culvert; also, one dwelling, and ten dwellings near the railroad on Wiehle street drained water-closet waste into it as late as February 6, 1885. Above the railroad, about sixty houses drain wash water into the same brook—mostly through wooden culverts and sandy street gutters. One house on the park drive drains all wash water into the same stream, and a stable, for three horses, is situated nearly over it.

Odd Fellows' hall, containing on the first floor the city police station of that district, (occupied by six men all the time,) and one or two shops, is located beside the same stream on the south-west side of Main street, and has a privy well in the back yard, separated from the culvert only by a loose stone wall. Into this well, the police station water-closets drain, and from it into the river through the culvert. The other tenants of the building have the same arrangement, and, on account of fairs in the hall, many people use the privies in the yard over the same cess-pool.

The park here consists of little more than a roadway beside the river bank, and, consequently, is no protection against the drainage of liquid wastes into the river. Several small "hotels," (beer saloons,) viz: "William Stehle's," "Leon, Jr.," "L. Tissot's Fountain Park," and "Seitz's Falls Hotel;" also, a boat-club house and seven dwelling-houses, between the park drive and Ridge avenue, above Dobson's run, drain all waste water into the river, either directly by pipe sewer or through the gutters to the storm-water culverts under the roadway.

The principal sources of contamination at the Falls are the extensive carpet, blanket, and cloth mills of John & James Dobson, situated a short distance back from the river on a natural water-course commonly called "Dobson's run," which furnishes water for the mills, and carries the waste matter to the river. The principal pollution is evidently from dyeing and wool-scouring. Whether there is any other, I cannot with certainty say, having been denied permission to inspect the mills. The proprietors claim to remove all water-closet waste to farms for manure, and to use a process for recovering the oil employed in scouring cloth. How carefully and fully this is done, I am unable to state, but the appearance of the stream at its mouth beside the park drive is certainly very repulsive, often attracting the attention of parties driving past, and indicates a striking, if not serious, case of pollution.

In order to measure the amount of this filth, and to determine its composition, I built a weir near the mouth of the run, on the park property, (by consent of the superintendent,) and collected samples of the water to be analyzed by Dr. A. R. Leeds, of Stevens' Institute.

While it is impossible to determine the actual pollution by this means except an infinite number of samples be taken, on account of the great variety and constant changes in the character of the waste, I believe that those samples fairly represent the average flow during the daytime, especially Nos. 1 and 2. No. 3 was taken just after the midday recess, and seemed to consist principally of dye-house water, with little or no wool-scouring waste.

When sample No. 1 was taken, about 70,000 gallons per hour of this filth were flowing into the river, or 700,000 gallons in the ten hours per day during which the mills are in operation. This I have found to be about the average dry weather flow during working hours. During the first part of the night, while the storage reservoir above the mills is filling up, the

flow falls to less than half that quantity. The stream below the mills does not then assume the same purity as above, as some might suppose, but continues very foul even till the mills start up again in the morning, on account of the long bed of semi-liquid filth through which it flows. Observations in the early morning, after the reservoir is full and before the mills start, show that the corresponding natural flow of the stream is about 38,000 gallons per hour, or 912,000 gallons per day. The natural character of the stream above the mill is shown by the analysis of the sample taken (at about the same time as No. 1, at the weir,) from above the reservoir. Over 60,000 gallons per hour of the liquid represented by No. 2 were flowing into the river when that was taken, and about 27,000 gallons of No. 3.

Some idea of the great extent of the pollution from these mills may also be obtained from the following list of the quantities of material used per day, as obtained from the office of the proprietors in January, 1884; the quantities of dye stuffs and chemicals given are, approximately, one three hundred and sixty-fifth of the amount actually used during one year:

45,000	pounds	of wool scoured.
500	"	tallow (used in soap for scouring).
11	"	acetic acid.
19	"	muriatic acid.
31	"	oxalic acid.
3	"	tartaric acid.
88	"	alum.
64	"	aniline dyes.
27	"	butter of antimony.
235	"	aqua ammonia.
42	"	aqua fortis.
674	"	archil liquor.
24	"	barwood.
90	"	bi-chromate of potash.
33	"	black dye.
12	"	bluestone (blue vitriol).
3	"	borax.
245	"	brimstone.
9	"	camwood.
124	"	caustic soda.
17	"	cochineal.
7	"	copperas.
16	"	cream of tartar.
27	"	crystals of tin.
8	"	cud-bear.
24	"	cutch (catechu).
247	"	extract of bark (quercitron).
80	"	extract of fustic.
19	"	extract of indigo (acid).

165 pounds of extract of indigo (neutral).
22 " extract of logwood.
11 " extract of logwood, (liquid.)
192 " extract of sumac.
4 " flavine.
7 " fuller's earth.
47 " chipped fustic.
2 " gambier.
715 " Glauber's salts.
60 " gum substitute.
69 " hypernic.
42 " indigo.
3 gallons of iron liquor.
1 pound of litharge.
2,351 pounds of chipped logwood.
26 " madder.
3 " muriate of copper.
3 " muriate of iron.
3 " muriate of tin, (double.)
16 " muriate of tin, (single.)
3 " nutgalls.
505 " oil of vitriol.
82 " Paris white.
36 " pipe clay.
3 gallons of red liquor.
2 pounds of red sanders wood.
344 " sal soda.
349 " soda ash.
66 " sumac.
4 " turmeric.
10 " yellow prussiate of potash.

The same stream also receives wash water and other liquid refuse from about twenty houses on the north side of Ridge avenue, under the back yards of which the run flows in a culvert, and water-closet drainage from three of them, (having 15 occupants;) wash water, kitchen, and other garbage from three houses beside the uncovered portion, between the mills and the river, and privy drainage from one of them, (having 6 occupants;) the liquid waste from a slaughter-house, between Ridge avenue and the park drive, (slaughtering four cattle and one calf per week,) as well as the drainage of a manure pile at the same place, on which is thrown some of the offal; the drainage of a hog-pen, adjacent to the slaughter-house, containing, at time of inspection, four swine; some wash water from about twenty houses east of Ridge avenue, near the railroad, draining into the run, opposite the mills, through shallow channels on the surface of the ground from which the liquid is largely absorbed or evaporated, leaving the solid or-

ganic matters to be washed in by the first heavy rain, and more or less house waste water from an indefinite number of dwellings on Ridge avenue, flowing in at the intersection of the stream with that street, together with the street washings from about half a mile of Ridge avenue at the time of rains.

Above the mill, Dobson's run appears to be quite a pure stream, receiving no pollution of note except the drainage of a large pile of rotton wool waste from the mills. It drains a considerable territory, mostly grass and wood lands, with few houses near its course.

Between the falls and Girard avenue, there is no special source of pollution on the left-hand side, except from the park buildings—Woodford House and Strawberry Mansion—which have cess-pools with overflows to the river—about to be cut off, however—and the extensive cemeteries occupying the steep slopes below the falls. No special investigation was made to determine the extent of the pollution from the latter source.

Just below Girard avenue bridge and the Spring Garden pumping station, is the mouth of a public sewer, built many years ago, on or near the line of a natural water-course from above Thirty-first and Master streets. It formerly drained entirely the extensive breweries of that vicinity, but, after the extension of the Pennsylvania avenue sewer to a point near Thirty-third street, all foul waste connections with the old sewer were ordered to be cut off, but repeated efforts to enforce this order had not been wholly successful, as was evident from the vile appearance of the outflow. By your instructions, I explored this sewer from the mouth to its source on August 23, 1884, under the guidance of Mr. J. K. Little, of the survey department, engineer in charge of the construction of sewers. At that time, the lower portion consisted of a 6-foot and 5-foot tunnel, (except opposite the forebay of the pumping station, where a plank culvert had been temporarily placed,) and, owing to imperfect grade, there was a deposit of gravel and silt, saturated with filth from the breweries, two feet in depth in some places, and averaging more than a foot in depth. A small stream, entering opposite the upper end of the old pumping station, was clear at that time, and the engineer of sewers stated that it was from springs, and received no brewery waste. Three foul discharges were found. The first was under or opposite the brewery of J. & P. Baltz. The flow at the time was small (six or eight gallons per minute) and not very foul—apparently, the rinsing of kegs or vats. Much more filthy in appearance was a larger stream (perhaps fifteen gallons per minute) under or near the grounds of G. F. Rothacker & Sons, brewers. The third discharge was just above this, and probably from Rothacker's brewery also, consisting, apparently, of condensed steam mixed with a small quantity of brewery waste. The source of the small stream flowing through a stone and plank culvert into the upper end of the sewer was not determined, since, from lack of ventilation, the amount of oxygen was too small to support combustion in lamps, or to sustain life long enough for a thorough examination, but it is my belief that

the most, if not all, comes from springs or by filtration from a natural water-course, which has been diverted just above this point into a branch of Pennsylvania avenue sewer.

A second examination of this sewer was made on February 26, when more brewery drainage was found coming in than before. There seemed to have been an attempt made to close three inlets in the crown of the sewer, by inserting thin wooden disks, (like valves,) fitted in with coarse cloth; but none were tight, as was shown by small quantities of water flowing in at each, and one disk (or valve) had been opened, evidently by a heavy fall of water on one side. The same inlet was discharging a large volume on my return (down the sewer) so great as to be heard several hundred feet away. Hastening to it as rapidly as possible, I measured the flow, (by means of a bucket brought in for the purpose,) and found it to be about 60 gallons a minute. It soon decreased in volume, and this flow may not have been the maximum. The character of this discharge was very foul, sour to the taste and smelling strongly of spoiled beer. The smaller flow, observed on going up, was less offensive. All of these three large inlets in the crown of the sewer were under or opposite the J. & P. Baltz brewery.

The other discharges discovered in this second inspection, (February 26,) were as follows: About five gallons per minute of milky water, slightly sour, opposite Bergner & Engel's brewery; a small flow of nearly clear water from a very foul-looking inlet opposite Arnholt & Schaffner's brewery, and two inlets evidently from George F. Rothacker & Sons' brewery—one flowing about one gallon per minute of very foul water and the other warm water, (condensed steam,) slightly sour.

Since the first inspection, the lower portion of the sewer from the old pumping station to a point past the new intercepting (Manayunk) sewer had been rebuilt with three-feet section having sufficient and regular grade, so that there was no longer the collection of filthy mud above referred to, though some remained in the old part a short distance above the new.

A gauging of the flow at the outlet of the sewer on February 28, 1885, gave a volume of about 200 gallons per minute, or 288,000 gallons per day, of which considerable is under-drainage through the sides of the sewer, which are not water-tight. This condition favors additional pollution, other than the direct admission of foul waste liquid. The walls of the sewer opposite the breweries were thickly covered with slime, showing the passage along the outside of the tunnel through the earth of much foul liquid. This is also the case under Bergner & Engel's stables, which are thus indirectly drained into the sewer.

[Supplementary.—March 13, 1885. In accordance with your instructions, I have made to-day a third inspection of the Girard avenue sewer to ascertain the result of the work of the Board of Health in cutting off the foul drainage into the river from this sewer. Just above the manhole at Thirty-second street and Pennsylvania avenue a bulkhead of brick and cement had been built in the tunnel, stopping entirely the flow through the sewer at

that point. But water was flowing in through the walls just below in quantity apparently nearly as great as before. The water, having been filtered in passing through the earth around the bulkhead, was much clearer than before, but still had a decided odor of brewery waste. All inlets to the sewer above this point having been closed according to the specifications of the Board of Health, I could make no inspection of the work above—other bulkheads and closed inlets.

March 16.—In a fourth inspection of the Girard avenue sewer to-day, I discovered that the branch sewer entering opposite the old pumping station, and said by the engineer of sewers to have no connection with any breweries, was discharging water having a decided odor and taste of brewery waste. I am informed by Inspector William May, of the survey department, that this has direct connection with the breweries on Thirty-third street. In his inspections of last fall, he had often found it discharging brewery waste. The discharge from these breweries is not constant, and the sewer is so smooth and well graded that little or no sediment is retained long after the foul flow stops, which accounts for the clear water without suspicion of foul drainage in my first inspection. A public sewer, connecting with Pennsylvania avenue sewer, is about to be built up Thirty-third street, with which, I understand, these breweries will have to connect.]

No further pollution from the left-hand side was discovered, except some drainage from the boat-house just above the Fairmount pumping station. The Fairmount Rowing Association (having 10 active members) had urinals draining into the river last summer, but all the others claimed to drain all water-closet waste into tight cess-pools.

From the right-hand side, within the city limits, (West Philadelphia,) the following foul drainage is received:

In the ravine back of Horticultural Hall, (Fairmount Park,) was, on August 8, 1884, a public urinal draining into the brook beside which it stands, and on the top of the bank, some 200 feet distant from and 30 feet above the stream, a large heap of manure, decaying leaves, plants, etc.

At the Belmont steamer landing, more or less waste water (from washing milk glasses and ice-cream dishes) runs in over the ground from a small restaurant.

The repair shops of the Pullman Palace Car Company, at Forty-first and Poplar streets, had privies, (as late as February 21, 1885,) for 250 men over a brook entering the park east of Fortieth street, above Girard avenue. The same stream receives considerable foul waste as it flows past the block of houses on the south side of Girard avenue, between Fortieth and Forty-first streets.

The Zoölogical Garden, on the right bank, below Girard avenue bridge, has partial drainage into a small brook flowing from the garden to a swamp beside the river, viz: from the yards containing the alligators, beavers, llamas, and deer; also, the pelicans and other water-fowl. The flow of this stream is quite small in dry weather, and appears to have no regular course

through the swamp, which is separated from the river by the tow-path of the Navigation Company; hence but little pollution from this is indicated in dry weather.

The total population having water-closet drainage in the summer into the Schuylkill river, between Flat Rock and Fairmount dams, when all the mills are in full operation, and the drainage arrangements the same as last summer, aggregates about 4,150, divided as follows: Manayunk mills, 2,300; dwellings, stations, offices, etc., at Manayunk, 500; Wissahickon and the Park hotels, (including Riverside Mansion) 1,000; Falls of Schuylkill, 100; West Philadelphia, 250.

The number of persons using water-closets on boats (excursion steamers and canal boats) is not included in the above, and I have made no estimate of their number.

Very respectfully,

DANA C. BARBER,
Assistant Engineer.

SUMMARY OF STATISTICS OF POLLUTION OF SCHUYLKILL RIVER.

Investigations made from December 19, 1883, to January 14, 1884.

ITEMS.	DISTRICTS.						
	FIRST. (Whole Valley above Reading.)	SECOND. (From upper boundary of Reading to mouth of Manatawny creek.)	THIRD. (From above Manatawny creek to intake of Phœnixville water works.)	FOURTH. (From Phœnixville water works to Norristown water works.)	FIFTH. (From Norristown water works to Conshokocken water works.)	SIXTH. (From Conshohocken water works to Roxboro' pumping station.)	SEVENTH. (From Roxboro' pumping station to Fairmount water works.)
Drainage area,	656.9 sq. miles.	398.0 sq. miles. 1,054.9 "	149.4 sq. miles. 1,204.3 "	517.6 sq. miles. 1,721.9 "	29.5 sq. miles. 1,751.4 "	38.5 sq. miles. 1,789.9 "	74.0 sq. miles. 1,863.9 "
Population,	91,000	86,000 177,000	25,500 202,500	64,500 267,000	19,500 286,500	16,200 302,700	48,800 351,500
Domestic sewage.							
Daily water supply, *a* representing domestic waste water,	2,600,000 gals.	4,500,000 gals. 7,100,000 "	200,000 gals. 7,300,000 "	*b* 475,000 gals. 7,775,000 "	950,000 gals. 8,725,000 "	75,000 gals. 8,800,000 "	
Population having direct water-closet drainage, *c d*	4,300	600 4,900	500 5,400	1,950 7,350	1,300 8,650	675 9,325	1,700 11,025
Population having indirect or filtered water-closet drainage—privies on banks of streams, cesspools with overflows to sewers or streams, etc., *d*	2,500	200 2,700	300 3,000	200 3,200	*e* 1,750 4,950	150 5,100	1,100 6,200
Population having complete drainage by water carried to the river *f*	2,500	150 2,650	250 2,900	1,000 3,900	150 4,050	100 4,150	100 4,250
Population having direct drainage for wash water only, *f*	1,500	250 17,50	200 1,950	400 2,350	700 3,050	100 3,150	400 3,550
Population having gutter drainage for wash water, *f*	15,000	15,000 30,000	2,000 32,000	3,500 35,500	5,000 40,500	2,000 42,500	2,500 45,000

☞ Figures in BOLD FACE indicate totals down to the lower end of the district represented by the column in which they occur.

a From public supply only.
b Perkiomen water-shed above Schwenksville not included in the remainder of this column.
c Including population in mills having privies over streams, or water-closets discharging directly into them.
d Estimated from data obtained from manufacturers, borough surveyors, and other local authorities, and from observation.
e Including insane asylum at Norristown.
f Estimated from data obtained from borough surveyors and other local authorities, and from observation.

SUMMARY OF STATISTICS OF POLLUTION OF SCHUYLKILL RIVER.—Continued.

Materials used in Manufactories Discharging Wastes into Streams.	First district.	Second district.	Third district.	Fourth district.	Fifth district.	Sixth district.	Seventh district.
Woolen Mills.							
Number,	0	4	2 6	2 8	8 16	3 19	16 35
Quantity of wool scoured per day,		284 lbs.	6 lbs. -	22 lbs. 135 "	12,315 lbs.	6,800 lbs.	73,400 lbs.
		366 "	284 " 372 "	306 " 507 "	12,621 " 507 "	19,421 " 507 "	92,821 " 507 "
Quantity of soda ash used per day,		5 " -	5 "	5 "	351 " 6 " -	366 "	340 " 6 " -
		2 " -	2 "	2 "	366 8	8 "	706 " 14 "
Quantity of tallow used per day,		8 "	3 " -	3 " -	128 " 19 "	80 " 33 "	560 " 360 "
			8 3	8 " 6 "	136 " 25 "	216 " 58 "	776 " 418 "
Quantity of potash used per day,					68 "	68 "	68 "
Quantity of caustic soda used per day,		2 " -	5 " -	.5 " -	22 " 4 " -	16 " 6 " -	184 "
			2.5 "	3 "	22 7	38 " 13 "	38 " 197 "
Paper Mills.							
Number,	0	4	2 6	6 12	2 14	2 16	5 21
Quantity of cloth rags (foreign) used per day,						1,700 lbs.	1,700 lbs.
Quantity of cloth rags (domestic) used per day,		8,500 lbs.	8,500 lbs.	822 lbs. 9,322 "	9,322 "	6,850 " 16,172 "	1,800 " 34,172 "
Quantity of paper rags used per day,		2,000 "	2,500 " 4,500 "	4,500 " 11,600 "	4,500 " 11,600 "	4,500 " 11,600 "	4,500 " 3,580 " 15,180 "
Quantity of wood (mostly poplar) used per day,			8 cords.	8 cords.	8 cords.	8 cords.	54 cords.
Quantity of wood pulp used per day,							62 "
Quantity of jute butts used per day,					11,000 lbs.	1,700 lbs.	3,130 lbs.
Quantity of jute sacks used per day,		5,000 lbs.	5,000 lbs.	5,000 lbs.	5,000 "	12,700 " 5,000 " 6,430 "	12,700 " 5,000 " 6,430 "

☞ Figures in BOLD FACE indicate totals down to the lower end of the district represented by the column in which they occur.
☞ Figures UNDERSCORED indicate estimates based on data obtained from similar works.

SUMMARY OF STATISTICS OF POLLUTION OF SCHUYLKILL RIVER.—Continued.

MATERIALS USED IN MANUFACTORIES DISCHARGING WASTES INTO STREAMS.	First district.	Second district.	Third district.	Fourth district.	Fifth district.	Sixth district.	Seventh district.
Paper Mills—Continued.							
Quantity of lime used per day,		2,500 lbs. 325 "	5,000 lbs. 650 " 7,500 " 975 "	533 lbs. 8,033 " 975 "	1,400 lbs. 9,433 " 975 "	2,700 lbs. 12,133 " 975 "	31,000 lbs. 3,000 " 43,133 " 3,975 "
Quantity of soda ash used per day,		100 "	2,000 " 120 " 2,000 " 220 "	411 " 2,411 " 220 "	55 " 2,466 " 220 "	2,466 " 220 "	3,400 " 12,000 " 5,866 " 12,220 "
Quantity of chloride of lime used per day,		1,400 " 100 "	2,000 " 120 " 3,400 " 220 "	123 " 3,523 " 220 "	4,330 " 7,853 " 220 "	515 " 8,368 " 220 "	7,540 " 15,908 " 220 "
Quantity of copperas used per day,				60 " 100 "	60 " 100 "	60 " 100 "	60 " 100 "
Quantity of alum used per day,			100 lbs.	25 " 125 "	125 "	130 " 255 "	255 "
Quantity of rosin used per day,						21 "	21 "
Quantity of clay used per day,				200 "	200 "	200 "	200 "
Quantity of yellow ocher used per day,				29 "	29 "	29 "	29 "
Quantity of "orange mineral" used per day,			3 lbs.	3 "	3 "	3 "	3 "
Quantity of "ultra marine" or aniline blue used per day,				2 " *b*	2 "	2 " *b*	2 " *a*
Quantity of water used per day,		*a* 755,000 gals.	*a* 755,000 gals.	576,000 gals. *c* 1,331,000 "	*c* 1,331,000 gals.	500,000 gals. *d* 1,831,000 "	2,070,000 gals. *e* 3,901,000 "
Dye Houses. (Generally in connection with woolen or cotton mills.)							*f*
Number,	0	4	2 2	1 7	7 14	7 21	26 *f* 47
Quantity of acetic acid used per day,							11 lbs.
Quantity of muriatic acid used per day,							19 "
Quantity of oxalic acid used per day,					4 lbs.	4 lbs.	33 " 37 "

Quantity of tartaric acid used per day,							3 lbs.
Quantity of alum used per day,					14 lbs.	14 lbs.	116 "
							130 "
Quantity of aniline dyes used per day,	1 lb.	1 lb.	1 lb.	3 "		[g] 2 "	118 "
				4 "		6 "	124 "
Quantity of muriate of antimony used per day,							5 "
Quantity of oxymuriate of antimony used per day,							2 gals
Quantity of butter of antimony used per day,							27 lbs.
Quantity of aqua ammonia used per day,					15 lbs.	15 lbs.	228 "
							243 "
Quantity of aqua fortis used per day,							42 "
Quantity of archil liquor used per day,							674 "
Quantity of quercitron bark (extract) used per day,							248 "
						8 lbs.	256 "
Quantity of oak bark used per day,	1 lb.	1 lb.	1 lb.	1 lb.		1 "	1 "
Quantity of barwood used per day,							24 "
Quantity of bichromate of potash used per day,	3 lbs.	3 lbs.	0.5 lbs.	16.5 lbs.		20 lbs.	101 "
			3.5 "	20 "			121 "
	1 "	1 "	1 "	1 "		1 "	1 "
							40 "
Quantity of black dye used per day,							227 "
Quantity of bluestone (blue vitriol) used per day,	3 lbs.	3 lbs.	3 lbs.	45 lbs.		25 lbs.	300 "
				48 "		73 "	1 "
	1 "	1 "	1 "	1 "		1 "	3 "
Quantity of borax used per day,							245 "
Quantity of brimstone used per day,							3 "
Quantity of burlapping used per day,							17 "
Quantity of camwood used per day,							339 "
Quantity of catechu (cutch) used per day,					5 lbs.	12 lbs.	356 "
						17 "	124 "
Quantity of caustic soda used per day,							205 "
Quantity of chloride of lime used per day,							35 "
Quantity of chrome used per day,					14 lbs.	14 lbs.	49 "
Quantity of pipe clay used per day,		1 lb.					36 "
Quantity of cochineal used per day,			0.5 lbs.	1.5 lbs.		1.5 lbs.	17 "
Quantity of muriate of copper used per day,			1.5 "				18.5 "
							3 "
Quantity of copperas used per day,				33 lbs.		39 lbs.	45 "
						72 "	117 "

☞ Figures in BOLD FACE indicate totals down to lower end of the district represented by the column in which they occur.
☞ Figures UNDERSCORED indicate estimates based on data obtained from similar works.
a By two mills only. *b* By one mill only. *c* By three mills only. *d* By four mills only. *e* By six mills only. *f* Besides two from which statistics were not obtained.
g For three or four months in the year only.

SUMMARY OF STATISTICS OF POLLUTION OF SCHUYLKILL RIVER—Continued.

MATERIALS USED IN MANUFACTORIES DISCHARGING WASTES INTO STREAMS.	First district.	Second district.	Third district.	Fourth district.	Fifth district.	Sixth district.	Seventh district.
Dye Houses—Continued.							
Quantity of cream of tartar used per day,							16 lbs.
Quantity of cudbear used per day,							8 "
Quantity of fluorine used per day,							4 "
Quantity of fustic (extract) used per day,							94 "
Quantity of fustic (chipped) used per day,		1 lb.	1 lb.	1 lb.	86 lbs. 87 "	87 lbs.	56 " 143 "
Quantity of fuller's earth used per day,							7 "
Quantity of gambier used per day,							2 "
Quantity of Glauber's salts used per day,							733 "
Quantity of gum substitute used per day,							60 "
Quantity of hypernic (chipped) used per day,							109 "
Quantity of indigo used per day,							136 "
Quantity of indigo extract, neutral, used per day,							187 "
Quantity of indigo extract, acid, used per day,							19 "
Quantity of indigo auxiliary (zinc) used per day,							25 "
Quantity of iron liquor used per day,					0.5 gal.	0.5 gal.	6 gals. 6.5 "
Quantity of muriate of iron used per day,							3 lbs.
Quantity of nitrate of iron used per day,					70 lbs.	70 lbs.	70 "
Quantity of litharge used per day,							1 "
Quantity of lima-wood used per day,							16 "
Quantity of lime used per day,							52 "
Quantity of logwood, extract, used per day,		40 lbs. 13 "	40 lbs. 13 "	40 lbs. 13 "	309 lbs. 349 " 13 "	270 lbs. 619 " 13 "	1,577 " 2,196 " 13 "
Quantity of logwood, extract, (liquid) used per day,							11 "
Quantity of logwood, chipped, used per day,		16 lbs. 5 "	13 lbs. 29 " 5 "	29 lbs. 5 "	40 lbs. 29 " 45 "	950 lbs. 979 " 45 "	2,750 " 20 " 3,729 " 65 "

Quantity of madder used per day,							56 "
Quantity of nut galls used per day,							3 "
Quantity of paris white used per day,							82 "
Quantity of red liquor used per day,							3 gals.
Quantity of red sanders-wood used per day,							2 lbs.
Quantity of sal soda used per day,		1 lb.	3 lbs.	143 lbs.	146 lbs.		380 "
			3 "	146 "	1 "		526 "
			1 "	1 "	—		1 "
			—	—			—
Quantity of soda ash used per day,				27 "	40 "		782 "
Quantity of stannate of soda used per day,					67 "		849 "
Quantity of sumac, powdered, used per day,							2 "
Quantity of sumac, extract, used per day,					43 lbs.		150 "
							193 "
Quantity of muriate of tin used per day,				40 lbs.	40 "		348 "
							388 "
Quantity of tin crystals used per day,							40 "
Quantity of turmeric used per day,							30 "
Quantity of vitriol, oil of, used per day,							6 "
Quantity of whiting used per day,		1 lb.	1 lb.	14 lbs.	15 lbs.		578 "
				15 "			593 "
Quantity of yellow prussiate of potash used per day,							7 "
Quantity of various kinds other than logwood used per day,							10 "
							a
					90 lbs.		150 "
							a
							240 "
Print Works.							
Number,					1		1
Product per day,					40,000 yds.		40,000 yds.
Quantity of muriatic acid used per day,					200 lbs.		200 lbs.
Quantity of oxalic acid used per day,					240 "		240 "
Quantity of tartaric acid used per day,					1 "		1 "
Quantity of alum used per day,					9 "		9 "
Quantity of aniline dyes used per day,					3 "		3 "
Quantity of aniline oil used per day,					14 "		14 "
Quantity of antimony used per day,					3 "		3 "
Quantity of aqua fortis used per day,					85 "		85 "
Quantity of barwood used per day,					390 "		390 "
Quantity of bi-chromate of potash used per day,					195 "		195 "

☞ Figures in BOLD FACE indicate totals down to the lower end of the district represented by the column in which they occur.
☞ Figures UNDERSCORED indicate estimates based on data obtained from similar works.
a Not including one large and one small house from which statistics were not obtained.

SUMMARY OF STATISTICS OF POLLUTION OF SCHUYLKILL RIVER—Continued.

MATERIALS USED IN MANUFACTORIES DISCHARGING WASTES INTO STREAMS.	First district.	Second district.	Third district.	Fourth district.	Fifth district.	Sixth district.	Seventh district.
Print Works—Continued.							
Quantity of blue vitriol used per day,						16 lbs.	16 lbs.
Quantity of catechu (cutch) used per day,						6 "	6 "
Quantity of chlorate of potash used per day,						3 "	3 "
Quantity of chloride of lime used per day,						72 "	72 "
Quantity of citron bark (extract) used per day,						33 "	33 "
Quantity of copperas used per day,						13 "	13 "
Quantity of gambier used per day,						281 "	281 "
Quantity of indigo used per day,						128 "	128 "
Quantity of indigo auxiliary (zinc) used per day,						95 "	95 "
Quantity of iron liquor used per day,						2 gals.	2 gals.
Quantity of lime used per day,						260 lbs.	260 lbs.
Quantity of litharge used per day,						4 "	4 "
Quantity of logwood (extract) used per day,						280 "	280 "
Quantity of oil of vitriol used per day,						300 "	300 "
Quantity of sal soda used per day,						83 "	83 "
Quantity of soap used per day,						6 "	6 "
Quantity of soda ash used per day,						483 "	483 "
Quantity of sugar of lead (brown) used per day,						42 "	42 "
Quantity of sumac (dry) used per day,						105 "	105 "
Quantity of sumac (extract) used per day,						57 "	57 "
Quantity of sulphur used per day,						185 "	185 "
Quantity of tin (bar) used per day,						4 "	4 "
Quantity of tin crystals used per day,						0.75 "	0.75 "
Quantity of yellow prussiate of potash used per day,						1 "	1 "
Gas Works.							
Number,	3	2 5	2 7	1 8	1 9	1 10	2 12
Average product per day,	*a* 55,000 cu. ft	*b* 130,000 cu. ft. 185,000 "	*c* 27,000 cu. ft. 212,000 "	*d* 9,000 cu. ft. 221,000 "	*e* 60,000 cu. ft. 281,000 "	*f* 25,000 cu. ft. 306,000 "	*g* 45,000 cu. ft. *h* 351,000 "

Quantity of crude petroleum used per day,		725 gals.	725 gals.	725 gals.	725 gals.	725 gals.	725 gals.
Quantity of naphtha or benzine used per day,	*a* 917 gals.	150 "	*g* 100 "	150 "	1,000 "	400 "	*g* 200 "
		150 "	150 "	150 "	150 "	150 "	350 "
		k 917 "	*b* 1,017 "	*m* 1,167 "	*c* 2,167	*d* 2,567 "	*e* 2,567 "
Quantity of very thick, pulpy waste discharged into the river per day,		180 "	180 "	180 "	180 "	180 "	180 "
Quantity of thick but less pulpy matter, (chiefly tar,) discharged into the river per day,				4 "	17 gals.	*c* 0 "	*d* 0 gals.
					4 "	4 "	4 "
					17 "	17 "	17 "
Quantity of thin, tarry, and oily liquid (mostly water,) discharged into the river per day,	*a* 5,000 gals.	160 gals.	*b* 550 "			*c* 0 "	*d* 0 "
		160 "	710 "	710 "	710 "	710 "	710 "
		5,000 "	5,000 "	5,000 "	5,000 "	5,000 "	5,000 "
Tanneries.			*e*				
Number,	5	7	2	4			
		12	14	18	18	18	18
Average number of cattle hides used per day,	16	36	52	4.5			
	4	52	4	2.5			
	-	4	—	56.5	56.5	56.5	56.5
				6.5	6.5	6.5	6.5
Average number of calf-skins used per day,	41	71		2			
		25		9			
		71	71	73	73	73	73
		66	66	75	75	75	75
Average number of sheep-skins used per day,		170	170	170	170	170	170
Average quantity of lime used per day,	160 lbs.	43 lbs.		22 lbs.			
		160 "	43 lbs.	27 "			
		43 "		65 "	65 lbs.	65 lbs.	65 lbs.
		320 "	320 "	347 "	347 "	347 "	347 "

☞ Figures in BOLD FACE indicate totals down to the lower end of the district represented by the column in which they occur.

☞ Figures UNDERSCORED indicate estimates based on data obtained from similar works.

a By one only; others very small. *b* By one only; other uses coal. *c* Probably very little, if any, pollution. *d* One claims no pollution; the other very little. *e* Not in operation.

SUMMARY OF STATISTICS OF POLLUTION OF SCHUYLKILL RIVER—Continued.

MATERIALS USED IN MANUFACTORIES DISCHARGING WASTES INTO STREAMS.	First district.	Second district.	Third district.	Fourth district.	Fifth district.	Sixth district.	Seventh district.
Tanneries—Continued.							
Average quantity of hen manure used per day,	1.5 bus.	2 bus. 3.5 "	3.5 bus.	0.20 bus. 0.25 " 0.20 " 3.75 "	0.20 bus. 3.75 "	0.20 bus. 3.75 "	0.20 bus. 3.75 "
Average quantity of bark used per day,	13,000 lbs.	5,500 lbs. 11,000 " 5,500 " 24,000 "	5,500 lbs. 24,000 "	4,100 lbs. 5,500 " 28,100 "	5,500 lbs. 28,100 "	5,500 lbs. 28,100 "	5,500 lbs. 28,100 "
Soap Works.							
Number,		1	1	1	1	1	1
Average quantity of grease used per day,		240 lbs.	240 lbs.	240 lbs.	240 lbs.	240 lbs.	240 lbs.
Average quantity of caustic soda used per day,		75 "	75 "	75 "	75 "	75 "	75 "
Average quantity of sal soda used per day,		55 "	55 "	55 "	55 "	55 "	55 "
Average product (hard soap) per day,		410 "	410 "	410 "	410 "	410 "	410 "
Average quantity of spent lye discharged into the river per day,		19 gals.	19 gals.	19 gals.	19 gals.	19 gals.	19 gals.
Glue Works.							
Number,	1	1 2	2	2	2	2	2
Quantity of "hide stock," (scraps from cattle hides and feet,) used per day,		*a* 2,500 lbs.	*a* 2,500 lbs.	*a* 2,500 lbs.	*a* 2,500 lbs.	*a* 2,500 lbs.	*a* 2,500 lbs.
Quantity of beef legs used per day,	*a* 700 lbs.	*a* 2,500 " *a* 2,500 " *a* 700 "	*a* 2,500 " *a* 700 "	*a* 2,500 " *a* 700 "	*a* 2,500 " *a* 700 "	*a* 2,500 " *a* 700 "	*a* 2,500 lbs. *a* 700
Quantity of lime used per day,		*a* 122 "	*a* 122 "	*a* 122 "	*a* 122 "	*a* 122 "	*a* 122 "
Quantity of oil of vitriol used per day,		*a* 100 "	*a* 100 "	*a* 100 "	*a* 100 "	*a* 100	*a* 100 "

| | | |

SUMMARY OF STATISTICS OF POLLUTION OF SCHUYLKILL RIVER—Continued.

MATERIALS USED IN MANUFACTORIES DISCHARGING WASTES INTO STREAMS.	First district.	Second district.	Third district.	Fourth district.	Fifth district.	Sixth district.	Seventh district.
Fur Hat Factory.							
Product per day,				17	17	17	17
Quantity of chipped logwood used per day,				50 lbs.	50 lbs.	50 lbs.	50 lbs.
Quantity of chipped fustic used per day,				3 "	3 "	3 "	3 "
Quantity of cudbear used per day,				1.5 "	1.5 "	15 "	1.5 "
				a	*a*	*a*	*a*
Quantity of hypernic used per day,				2.5 "	2.5 "	2.5 "	2.5 "
Quantity of oil of vitriol used per day,				2 "	2 "	2 "	2 "
Slaughter Houses.							
	b	*c*	*c*	*c*	*b*		
Number,	6	*b*	*b*	*b*	5	*c*	*c*
		6	6	6	*b*	*b*	*b*
					11	11	11
					b		
	b	*b*	*b*	*b*	1		
Number of cattle slaughtered per day,	5	5	5	5	*b*	*b*	*b*
					6	6	6
					b		
					9		
	b	*b*	*b*	*b*	*b*	*b*	*b*
Number of hogs slaughtered per day,	50	50	50	50	59	59	59
Rolling Mills.							
		6	4	2	2	1	0
Number,	1	7	11	13	15	16	16
		d	*d*				
		2 gals.	1 gal.	*f*	10 gals.		
Quantity of oil used on rolls per day,	2 gals.	*e*	*f*	5 gals.	*g*	*g*	*g*
		4	5 "		15 "	15 gals.	15 gals.
Tack Works.							
Number,					1	1	1
Quantity of oil of vitriol wasted per day,					1 gal.	1 gal.	1 gal.

☞ Figures in BOLD FACE indicate totals down to the lower end of the district represented by the column in which they occur.
☞ Figures UNDERSCORED indicate estimates based on data obtained from similar works.
a In summer only. *b* Not including many small places. *c* No large establishments. *d* By one only. *e* By two only. *f* By three only. *g* By five only.

SUMMARY OF POLLUTION OF THE RIVER SCHUYLKILL BY DOMESTIC SEWAGE.

From Investigations made in the year 1885.

(Population estimated for January 1, 1885.)

ITEMS.	DISTRICTS.						
	FIRST. (Whole Valley above Reading.)	SECOND. (From upper boundary of Reading to mouth of Manatawny creek.)	THIRD. (From above Manatawny creek to intake of Phœnixville water works.)	FOURTH. (From Phœnixville water works to Norristown water works.)	FIFTH. (From Norristown water works to Conshohocken water works.)	SIXTH. (From Conshohocken water works to Roxboro' pumping station.)	SEVENTH. (From Roxboro' pumping station to Fairmount pumping station.)
Drainage area,	656.9 sq. miles.	{ 398.0 sq. miles. { 1,054.9 "	{ 149.4 sq. miles. { 1,204.3 "	{ 517.6 sq. miles. { 1,721.9 "	{ 29.5 sq. miles. { 1,851.4 "	{ 38.5 sq. miles. { 1,789.9 "	{ 74.0 sq. miles. { 1,863.9 "
Population,	91,000	{ 95,000 { 186,000	{ 28,000 { 214,000	{ 66,000 { 280,000	{ 22,000 { 302,000	{ 18,000 { 320,000	{ 52,000 { 372,000
Domestic Sewage.							
Daily water-supply, *representing domestic waste water,	2,600,000 gals.	{ 4,500,000 gals. { 7,100,000 "	{ 200,000 gals. { 7,300,000 "	{ 500,000 gals.† { 8,800,000	{ 1,000,000 gals. { 7,800,000 "	{ 80,000 gals. { 8,880,000 "	
Population having water-closet drainage into the river,	5,000	{ 12,000 { 17,000	{ 750 { 17,750	{ 1,100 { 18,850	{ 2,800 { 21,650	{ 1,100 { 22,750	{ 4,150 { 26,900
Population having wash-water drainage into the river,	22,000	{ 40,000 { 62,000	{ 5,000 { 67,000	{ 3,000 { 70,000	{ 4,000 { 74,500	{ 1,500 { 76,000	{ 9,000 { 85,000

☞ Figures in BOLD FACE indicate totals down to the lower end of the district represented by the column in which they occur.

* From public supply only.

† Perkiomen water-shed above Schwenksville not included in the remainder of this column.

The chief engineer well remarks that "the Schuylkill, above Fairmount dam, is the natural sewer, first and last, for a population of 350,000, largely engaged in manufacturing, and whatever may be the varying judgments of physicists as to the power of a running stream to purge itself of foreign contamination, it is very certain that the river itself has, from time to time, furnished the most convincing evidence of its inability to digest or dispose of the extraneous and injurious matters discharging into it.

The character of the pollutions is as diversified as the occupations of the people. Sewage, chemicals, wool-washings, dye-stuffs, butcher, and brewery refuse—there is almost nothing lacking—and the most singular feature of the case is that the worst and most deadly contaminations are those which enter the river within the city limits and under the control of the municipal authorities. The circumstance has this advantage, that matters can be amended whenever the city shall choose to exercise her powers.

As the facts above related were gathered they were submitted to councils during the summer in successive reports, and the variety and number of the sources of pollution within the city limits were shown to be so formidable that councils who had already made provision for the partial construction of the many times recommended intercepting sewer on the east bank of the Schuylkill from above Manayunk to below Fairmount dam, referred the reports to the city solicitor with instructions to take such steps as were necessary to protect the health of the city from at least the more dangerous and readily remediable sources of danger. In consequence the solicitor, with great energy and good judgment, having made personal inspection of the several localities, selected three typical cases: one a house of entertainment with a large clientele and much water-closet drainage directly into the pool near the mouth of the Wissahickon; another a particularly foul mill on the bank of the river in the upper part of Manayunk, and a third, another mill in Manayunk employing a large number of operatives whose excremental discharges passed into the stream. Against the proprietors of these, prosecutions were entered with the coöperation of the district attorney, in the name of the Commonwealth, and after the finding of the true bills by the grand jury the cases were tried in the court of common pleas No. 3.

Convictions were secured in all the cases and the judgment of the court suspended, to afford an opportunity for compliance with the requirements of the law.

The charge of Judge Thayer is so valuable a contribution to the law of sanitation and a declaration of the rights of individuals and communities in relation to the vital matter of the water supply as to justify its reproduction in this place.

The Commonwealth of Pennsylvania *vs.* Soulas, *et al.*

Pollution of river water used for drinking purposes.

November 25, 1884.

Charge by Thayer, J.:

"Gentlemen of the Jury: The case which you are engaged in trying is one of much importance, and your responsibility is proportioned, of course, to its importance. The facts which have been proved by the evidence given on behalf of the Commonwealth are very few and simple. They are, however, very weighty, and it is my duty to add, have not been contradicted. The law also upon this subject is very plain. The defendants are charged in this indictment with maintaining a common nuisance by causing the excrement and foul water from the water-closets and urinals upon their premises, which are situated upon the bank of the Schuylkill river just above the confluence of the Wissahickon with that stream, to be drained into the river. It has been shown by witnesses, some of whom are experts in such matters, that the effect of this has been to pollute the drinking water of this city, and to render it unwholesome and dangerous. Such pollution has also been shown by competent and creditable evidence to have a direct tendency to produce disease in those who drink the water which is supplied to the city from the river Schuylkill.

Now, it is a very old and well settled law that to pollute a public stream is to maintain a common nuisance. It is not only a public injury, but it is a crime, a crime for which those who perpetrate it are answerable in a tribunal of criminal jurisdiction. An act of Assembly forbids and punishes as crimes all common or public nuisances, and I know of no public nuisance more serious in its evil effects and more obnoxious to the denunciation of the law than to corrupt and poison a public stream from which large numbers of people obtain their drinking water. If the jury, therefore, find that the defendants have done the acts charged against them in this indictment, no doubt whatever remains that they are guilty of the offense of maintaining a common nuisance, and ought to be convicted. If the water drained from the defendants' establishment into the river is of a foul and impure character, and if the effect of that is to pollute the water and render it unwholesome for drinking purposes, then they are guilty as they stand indicted, and it is your duty to say so.

"It is no defense to say that the premises are in the same condition, and the drainage conducted in the same manner, as when they obtained possession and began their occupancy. Their continuance of the nuisance is itself an offense against the law for which they are personally responsible. The law is perfectly well settled that no man can prescribe for a public nuisance, or defend himself by showing that others have violated the law before him. No length of time can justify a public nuisance, although it may furnish an answer to an action for a private injury. Public rights are not destroyed by private encroachments, no matter how long they have

endured. Nor is it any defense that the river is also polluted from other sources that impurities flow into it from sewers, and from towns and places above Manayunk. If the defendants have contributed to the pollution, they are guilty. No man can excuse himself for violating the law upon the ground that others also violate it. It is said that the city ought to have built an intercepting sewer. But what of that? Perhaps it ought. But if the city has been guilty of negligence in that respect that fact does not justify the defendants in their violation of the law. It makes no difference whatever in the guilt of the defendants that the city has not taken steps to protect itself against the unlawful acts of those who pollute the stream. Nor ought your verdict to be affected in the slightest degree by the suggestion that if these pollutions of the river are stopped by indictments and convictions, the effect of that may be injurious to large business interests, which are prosecuted under similar conditions upon the river. You have nothing to do with that. Such considerations cannot affect your duty in the present case. The law is to be enforced, and those who violate it are to be punished, no matter what the effect of that may be upon their business, for the law is above every personal and private interest. All persons engaged in business are bound to conduct that business in subordination to the law, and in such manner as not to injure the public. It has been argued also that the city ought to have resorted to a civil remedy against the defendant for the correction of these abuses, that it ought to have gone into a civil court and asked for an injunction against their continuance. Such suggestions have nothing to do with the case. It is sufficient that the defendants are arraigned by the Commonwealth to answer for an infraction of her laws. If they have broken those laws, they are in the proper tribunal to answer for their acts. Civil proceedings are slow, and in such proceedings, where the parties are private persons or corporations, which are a kind of artificial persons created by the State, many embarrassing and dilatory questions might obstruct and hinder the speedy abatement of the nuisance. In my judgment the remedy which has been chosen is the speediest and the most effective. It is a proper and lawful remedy, and you have no concern now with any other. The defendants are before you to answer the charge of maintaining a common nuisance, which is a public offense by the laws of Pennsylvania. The simple question which you have to decide is, whether the defendants are guiity of this offence. If they have done the acts which are charged against them in this indictment, then, as a matter of law, I instruct you that those acts constitute the offense of maintaining a common nuisance, and they are guilty. Upon the question of fact you have the testimony of numerous witnesses examined by the Commonwealth, and they have not been contradicted by any witness produced by the defendants."

The jury found the defendants guilty without leaving the box. Sentence was suspended to afford the defendants an opportunity to abate the nuisance, the court intimating that if the nuisance should be immediately and

wholly abated to the satisfaction of the officer to whom the supervision of such matters is entrusted by the city, it would be regarded as a sufficient satisfaction of the law; but unless this was done, a severe sentence would be imposed upon the defendants, and the court, by virtue of the power conferred upon it by the act of 1860, would, in addition, order the sheriff to abate the nuisance at the expense of the defendants.

The great importance of this adjudication as an exposition of the law of the land and indicating an effective and speedy method of righting abuses even of a long standing can hardly be over-estimated, and must be attended with the greatest benefits wherever its authority and application shall be found to be necessary.

Mr. Barber's report is filled with information concerning the elements of pollution along the Schuylkill, giving their quality and quantity, and furnishing the data with which the State can continue the effective work done by the county courts within the city limits.

The city of Philadelphia is at present engaged in an extensive investigation and survey, with the object of ascertaining the best source or sources from which it can be supplied with water in the future, when the present one will have to be abandoned. As a part of this work, a sanitary survey, such as the one made of the Schuylkill valley, has been made also of the Perkiomen, Lehigh, and Delaware water-sheds extending into New York State.

All of which is respectfully submitted.

RUDOLPH HERRING,
Chairman.

MOSTLY EXTRACTS FROM CRAES' WATER-WORKS TABLES.

Water Supply of Cities and Boroughs in the State of Pennsylvania.

NAME.	Population, 1880.	Water-works built in.	By whom owned.	Source.	Mode of supply.	Builders.	Cost.	Daily consumption.	Officers.
Allegheny,	78,682	1847	City,	Allegheny river,	Pump to reservoir,	A. Hartupee,	$1,100,000	10,000,000	Ed. Armstrong.
Allentown,	18,063	1827	City,	Springs,	Pump to reservoir and stand-pipe,	Bush Hill W'ks,	195,650	800,000	S. Thompson.
Altoona,	19,716	1871	City,	Surface water,	Gravity,		300,000	500,000	J. A. Baer.
Archbald,	3,049	1875	Company,	Surface water,	Gravity,		14,000		
Ashland,	6,052	1876	Borough,	Surface water,	Gravity,		63,100		F. Rodrian.
Beaver Falls,	5,104	1875	Company,	Beaver river,	Pump direct,	Holly,	30,000	30,000	W. Chandley.
Bedford,	2,011	1872 73	Town,	Springs,	Gravity,		34,000	20,000	G. Hawkins.
Bellefonte,	3,015	1823	Town,	Springs,	Pump to reservoir,	Knowles,	100,000	300,000	G. Rogers.
Berwick,	2,095	1848	Company,	Spring,	Pump to reservoir,		8,000		S. B. Bowman.
Bethlehem,	5,193	1754	Borough,	Spring,	Pump to tank,	Cameron,	30,000		Charles Bodder.
Blairsville,	1,162	1872	Borough,	Conemaugh creek,	Pump to reservoir,		25,000	125,000	John Bruce.
Bloomsburg,	3,702	1880	Company,	Fishing creek,	Pump to reservoir,	Birkinbine,	37,000	46,925	E. Jacoby, supt.
Bradford,	9,197	1877	Company,	Tunlangwant creek,	Pump direct,	Cameron,	25,000	(City built gravity works since.)	S. W. Vandersaal.
Bristol,	5,273	1875	Company,	Delaware river,	Pump to stand-pipe,	Worthington,	44,000	160,233	A. K. Joyce, supt.
Butler,	3,163		Company,		Pump,				W. M. Meredith.
Carbondale,	7,714	1868	Company,	Surface water,	Gravity,		20,400		L. Egerton, sec.
Carlisle,	6,209	1854	Company,	Connedogwinet creek,	Pump to reservoir,	Dean Brothers,		125,000	J. G. Heiser, sec.
Catasauqua,	3,065	1842	Company,	Lehigh river,	Pump to stand-pipe,		50,000	200,000	Joseph Hunt, supt.
Chambersburg,	6,877	1876	Town,		Pump to reservoir and direct,			500,000	A. C. McGrath.
Chester,	14,997	1867	City,	Delaware river,	Pump to reservoir,	C. A. Weidser,	79,000	406,000	H. C. Eyre, supt.
Clarion,	769							21,400	R. B. Thomas, supt.
Coatesville,	2,766	1870	Borough,	Springs,	Gravity,		42,000	120,000	F. F. Davis, supt.
Columbia,	8,312		Company,	½ Susquehanna, ½ Spring,	Pump to reservoir. Gravity.				
Conshohocken,	4,560	1873	Company,	Schuylkill river,	Pump to reservoir,	Worthington,	76,000		I. Lukens.
Danville,	8,346	1872 73	Borough,	Susquehanna river,	Pump direct,	Holly,	164,691		J. Foster.
Downingtown,	1,480	1874	Company,	Surface water,	Gravity,		54,000		J. B. Simes.
Doylestown,	2,070	1859	Town,	Springs,	Pump to reservoir,	Worthington,	35,000		
Dunmore,	5,151								
Easton,	11,924	1820	Company,	Lehigh and Del. rivers,	Pump to reservoir,		300,000	1,000,000	J. Maxwell.
Ebensburg,	1,123	1874	Borough,	Well,	Pump to reservoir,		16,000		H. J. Evans, supt.
Ephrata,	392	1878	Company,	Springs,	Gravity,		3,500		
Erie,	27,739	1840	City,	Lake Erie,	Pump to stand-pipe,		607,311	2,274,405	W. E. Hilton, supt.
Franklin,	5,010		Company,	Springs,	Gravity,				J. L. Hanna.
Gettysburg,	2,814				Gravity,				D. Kendlehart.

Hanover,	2,317	1874	Company,	Springs,	Gravity,		38,000	30,000	R. M. Wirt, sec.
Harrisburg,	30,762	1844	City,	Susquehanna river,	Pump to reservoir,	Worthington, ..	600,000	4,750,000	J. H. Wetmeyer.
Hazleton,	6,935		Company,		Pump and gravity,				D. Clark, supt.
Hollidaysburg,	3,150	1867	Borough,	Roaring run,	Gravity,		73,000		
Honesdale,	2,620		Company,		Gravity,			120,000	F. D. Thayer.
Johnstown,	8,580		Company,	Surface and spring water,	Gravity.				
Kennett Square,	1,021	1842-65	Borough,	Surface water,	Pump.				
Kittanning,	2,624	1871	Company,	Allegheny river,	Pump.				
Lancaster,	25,769	1836	City,	Conestoga creek,	Pump to reservoir,	Birkinbine-Worthington,	300,000	3,000,000	J. F. Macgonigle.
Lebanon,	8,778	1872	Borough,	Springs,	Gravity,		300,000		H. M. Allwein, supt.
Lewistown,	3,222		Company,		Gravity and pump to reservoir,	Worthington.			
Lock Haven,	5,845	1869	City,	Surface water,	Gravity,		130,000		E. McGill, supt.
Louella. (Wayne,)	2,000	1869	Company,	Ithan creek,	Pump to reservoir,	Worthington, ..	20,000	25,000	
McKeesport,	8,212	1882	Borough,	Ground water,	Pump to reservoir,	Worthington, ..	98,304	80,000	J. Ecoff, supt.
Mahanoy City,	7,181	1864	Company,	Springs and surface water,	Gravity,		78,500		
Mauch Chunk,	3,752	1849	Company,	Springs,	Gravity,		25,000		" M. Broadhead.
Meadville,	8,860	1875	Company,	French creek,	Pump to reservoir,		145,000	402,000	H. L. Richmond, sec.
Media,	1,919	1870	Town,	Surface water,	Pump to reservoir,	Worthington—Cassin,	65,000	125,000	
Milford,	983		Company,		Gravity,				Jno. McCarty, supt.
Minersville,	3,249		Company,		Gravity,				James Murray.
Mt. Carmel,	2,378	1882			Pump,	Worthington,			
Mt. Joy,	2,058	1873	Town,	Chiquesatonga creek,	Pump to reservoir,	Wimer,	35,000	66,000	William Kuhn, supt.
New Brighton,	3,653	1881	Company,	Beaver river,	Pump to reservoir,	Worthington, ..	50,000	500,000	R. E. Hoopes, supt.
New Castle,	8,418	1881	Company,	Shenango creek,	Pump to reservoir,			140,000	J. H. Harlow.
Norristown,	13,063	1847	Company,	Schuylkill river,	Pump to reservoir,	Worthington, ..	275,000	800,000	H. P. Sechler.
Oil City,	7,315	1872	City,	Allegheny river,	Pump to reservoir,		160,000		S. D. Miller, supt.
Oxford,	1,502	1869	Borough,	Surface water,	Pump to reservoir,			80,000	John Reed.
Parker City,	1,835		Company,		Pump,		31,000	80,000	A. Randolph.
Petrolia,	1,186	1874	Company,	Artesian well,	Pump to tank,		8,000	40,000	S. W. Harley.
Philadelphia,	847,170	1801	City,	Schuy kill river, / Delaware river,	Pump to reservoir,	Mixell,		67,647,782	W. Ludlow.
Phœnixville,	6,682	1873	Borough,	Schuylkill river,	Pump to reservoir,	Worthington, ..	200,000		F. B. Rhoades.
Pittsburgh,	156,389	1824	City, / Company,	Allegheny river, / Monongahela river,	Pump direct and to reservoir,	Stackhouse,		16,021,624	J. M. Atkinson.
Pittston,	7,472	1855	Company,	Susquehanna river,	Pump to reservoir,	Worthington, ..	106,593	480,000	R. J. Wisner, supt.
Plymouth,	6,065	1876	Company,	Springs and Susquehanna river,	Gravity and pump,	Knowles,	50,000		
Pottstown,	5,305	1871	Company,	Schuylkill river,	Pump to reservoir,	Worthington, ..	90,000	155,000	J. Fagely.
Pottsville,	13,253	1836-54-75	Company,	Surface water,	Gravity,		200,000		J. B. Fish.
Reading,	43,278	1821	City,	Surface water,	Gravity,		300,000		
Renovo,	3,768	1872	City,	Surface water,	Gravity,		65,000		J. H. Ferguson.
Ridgway,	1,100		Company,	Spring,	Gravity,				Dr. Earle, owner.
Scranton,	48,850	1857	Company,	Surface water,	Gravity,			5,000,000	C. E. Judson.
Sewickley,	2,053	1874	Borough,	Springs,	Gravity,		75,000	4,300	John Patton.
Shamokin,	8,184		Company,		Gravity,				H. Chester, supt.
Shenandoah,	10,147		Company,		Gravity,				S. D. Hess, supt.
Slatington,	1,634	1861	Company,	Springs,	Gravity,		10,000		O. A. Neff.
South Bethlehem,	4,925	1875	Company,	Lehigh river,	Pump direct,		32,378		H. S. Goodwin.
Stroudsburg,	1,860	1876	Company,	Springs,	Gravity,		16,000		
Summit Hill,	1,763								
Susquehanna,	3,467	1874	Company,	Springs,	Gravity,		6,500		
Tamaqua,	5,730	1850	Borough,	Springs,	Gravity and pump to reservoir.				
Tidioute,	1,255		Company,		Gravity.				
Tioga,	520	1874	Company,	Surface water,	Gravity and pump,		21,000	250,000	
Titusville,	9,046	1873	City,	Wells,	Pump direct,	Holly,	143,625	904,000	
Towanda,	3,814		Company,	surface water,	Gravity and pump.				

WATER SUPPLY—Continued.

NAME.	Population, 1880.	Water-works built in.	By whom owned.	Source.	Mode of supply.	Builders.	Cost.	Daily consumption.	Officers.
Tremont,	1,785	..	Company,	.....	Gravity.				
Tunkhannock,	1,116	1870	Company,	Springs,	Gravity,	.....	$15,000		
Warren,	2,810	1882	Company,	Allegheny river,	Pump to reservoir,	Knowles,	60,000		
West Chester,	7,046	1841	Borough,	Springs and surface water,	Pump to reservoir,	Worthington, ..	100,000	200,000	
West Pittston,	2,544	.....	.....	From Pittston.					
Wilkes-Barre,	23,339	1859	Company,	Surface water,	Gravity,	.....	.....	428,860	
Williamsport,	18,934	1853	Company,	Surface water,	Gravity.				
York,	13,940	1816	Company,	Springs and surface water,	Pump to reservoir,	Birkinbine.			

REPORT OF THE COMMITTEE ON PUBLIC BUILDINGS AND SCHOOL HYGIENE.

To the President and Members of the State Board of Health:

Owing to the brief time which has elapsed since our organization, your committee can report no special investigations, but, at this time, will offer certain recommendations for adoption by the Board, looking to effective work by the committee during the coming year. Your committee would, thereupon, ask your consideration of the following resolutions.

Resolved, That the Committee on Public Institutions and School Hygiene, in connection with the Secretary, be instructed to issue a circular addressed to the authorities or proprietors of all hospitals, asylums, public halls, and places of amusement, and churches in this State, requesting them to furnish information as to the sanitary condition of the buildings under their care or in their ownership, with special reference to ventilation, heating, air-space per individual, and water-closet arrangements, and that the portion of the act establishing this Board which refers to this subject be printed on the circular.

Resolved, That the Committee on Public Institutions and School Hygiene, acting in connection with the Secretary, be instructed to issue a circular addressed to all school authorities throughout the State, asking for specific information as to the sanitary condition of the several schools under their care or supervision, with special reference to methods of ventilation and heating, the amount of air-space provided for each pupil in the school-rooms, mode of lighting, character of water supplied for drinking, and water-closet accommodations, and that the portion of the act creating this Board bearing upon the subject be printed upon the circular.

Resolved, That the Executive Committee of this Board be authorized to employ inspectors of schools and other public buildings, who shall be furnished with instructions in detail, and clothed with official authority to make inspections of all public buildings under the direction of the executive officer.

Resolved, That the Committee on Public Buildings and School Hygiene be instructed to confer with the Department of Public Education with reference to the passage of a law making it a misdemeanor for any school-board, board of trustees, managing committee, or superintendent to proceed to the construction of any public educational building or school, or of an addition to any such building, without having first submitted the plans for the same to the State Board of Health, or to such sanitary officer as may be designated by said Board, and obtained the approval of such Board tive officer. All of which is respectfully submitted,

J. H. McClelland,
Chairman.

REPORT OF COMMITTEE ON SANITARY LEGISLATION, RULES AND REGULATIONS.

To the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania:

GENTLEMEN: Your Committee on Sanitary Legislation, Rules and Regulations, to whom was referred the preparations of a complete *resumé* of the laws of this State affecting the powers and duties of this Board, would respectfully report as follows:

DIGEST OF HEALTH LAWS.

There has been recently issued a new edition of Purdon's Digest, embracing the laws of Pennsylvania down to, but not including, those passed at the legislative session of 1885. Your committee thought it best to await the appearance of this new edition before beginning the work assigned to it. The work was issued, and a copy purchased by your Secretary for the use of the Board early in October. There has not been time since the purchase, however, to accomplish the task, and we are compelled to report these facts. It was very desirable that the compilation of the health laws affecting our State should be published in convenient form at as early a day as practicable. We hope and expect to have our full report on this subject in readiness for the meeting in May, 1886. It is proposed by the committee to include a carefully prepared index, together with such rules and regulations as shall have been adopted by this Board.

Rural Boards of Health.

The work of perfecting a plan of organization of local boards of health, such as shall, with reasonable certainty, secure the full performance of the work usually committed to such bodies, and at the same time guarantee their effective coöperation with the central health board, is found to be involved in numerous, yet not insurmountable, difficulties. It has required, and will yet require, earnest thought and study, the examination and comparison of plans found most effective in other States, and a full and free discussion of the subject in several of its aspects by the members of this Board. We had not gone very far in our consideration of the subject before we became convinced that a proper appreciation of our task would require us to make haste very slowly, and each succeeding step, we think, will demand equal care and caution and deliberation.

The duties of the State Board require its supervision to reach, not only the prominent cities and boroughs of the State, but its smallest towns and villages; yea, and its rural districts as well. Every township, and every part of each township, must be brought under our care before we shall be able to challenge the criticism of the people of the Commonwealth. The establishment of local boards in every city, every borough, every town, and every village, no matter how effective these boards may prove to be, will

leave more than nine tenths of our territory uncovered and unprotected by the State's sanitary watchfulness and care.

Your committee, therefore, believes it best that in organizing local boards we should take special cognizance of the sub-divisions of our State into counties and townships, and thus endeavor to bring every square mile of territory under their authority. Each county ought to have its board of health, with its office, archives, and records at the county seat for convenience of access and reference by the county legal authorities. Each township should have its working member of the county board. Proper representation should also be secured to each ward of any borough or city situated within the county.

The appointment of the members of the Board should be made by some authority, free from the influence of partisan politics. Doubtless, the courts of common pleas would be a safe reliance in the discharge of this trust. As the prothonotary of the common pleas and the clerk of the orphans' court are already, by law, brought into direct relationship with the State Board of Health, (the one for the registration of physicians, and the other for the licensing and registration of marriages,) both these officers might be made members of the county boards *ex-officio*.

The county boards should each have its executive "health officer," who should have chief supervision of the entire county. There should also be a subordinate local and resident health officer in each large borough or town, subject at first to the direction of the borough or town board, and to its superior, the county board. It is suggested that a complete understanding and more effective coöperation of the county health officer with the State Board could be secured if this officer's appointment required the confirmatory action of the central board, and if the latter board possessed the power of suspension or of dismissal for negligence or incompetence.

Each member of the county board should serve without salary. He should include in his duties the collection, monthly, of the birth reports from each physician resident in his township or ward, and the death certificates from each burial place. In case of his neglect or inability to make these collections, the county health officer should have full authority to make these collections, supported by such statutes as might be found requisite.

We do not think it advisable that, in legislating on this subject, the organizations now existing in boroughs, towns, or cities should be disturbed, except where these are well known to be inefficient, unless these boroughs and towns should themselves desire the change. The local boards could still exercise their local powers, being required, of course, to present stated reports to the county board. The county board could maintain relations with the local boards somewhat similar to those maintained by the State Board towards our present city and county boards, *i. e.*, an advisory and supplementary relation only.

The powers and functions of boards of health are so largely executive in character, and so liable to dangerous abuse, that they should be exercised

only in accordance with the precise and carefully-guarded terms of specific legislation. We find nothing in the act of June 3, 1885, which gives to this State Board the right to delegate any of its powers or prerogatives to county or local boards. Neither is there any direction to this Board to proceed to the organization of subordinate boards further than may be contained in the injunction of section five, requiring the State Board to suggest amendments to the sanitary laws of the Commonwealth.

It is said that each county already possesses the power to organize boards of health within its own borders. This may be true, but it seems very desirable, in planning for an efficient sanitary and statistical administration of the entire State, that there should be some measure of uniformity in the composition and work of these boards, and that they should all be brought into the closest possible relation to the State Board. It is for this reason that your committee suggests that further legislation should be secured in order to bring about this uniformity, and also to make the duty of effecting such organizations obligatory, and not to leave it longer optional with each county, or with officials who may neglect the duty with impunity.

Your committee now solicits instructions upon the following points:

First. Should there be one central board for each county?

Second. Should these embrace such boroughs and cities within the county as are not now provided with health boards, or should separate boards be organized for these cities and boroughs?

Third. How should the members of the boards be appointed?

Fourth. Of how many members should each board consist?

Fifth. How shall the *health officer* of each board be chosen, and shall the State Board have any voice in his appointment?

Sixth. Will special health officers be required in large boroughs? And if so, what shall be their relations to the county health officer—coördinate or subordinate?

Seventh. How shall vital statistics be collected from outlying rural districts?

Eighth. To what extent shall existing borough and town or city boards be continued, and what shall be their relation to county boards?

Ninth. Shall the plan of organization, when completed, be at once submitted for the action of the various counties, or shall it be referred back to this Board for the purpose of securing uniform legislation on the subject?

All of which is respectfully submitted on behalf of your committee.

Ordered to be printed in connection with the report of the Committee on Medical Legislation.

PEMBERTON DUDLEY, M. D.,
Chairman.

The Proper Organization of Local Boards of Health.

By Benjamin Lee, A. M., M. D., Ph. D., *Secretary.*

[Being the substance of addresses delivered before the Lehigh Valley Medical Association, the annual convention of the Association of Directors of the Poor of the State of Pennsylvania, the American Academy of Medicine, and the Social Science Association of Philadelphia.]

The important position assigned to hygiene and State medicine during the past decade is an evidence at once of an advanced stage of civilization and of a dense and rapidly-increasing population. It indicates that the statesmen of a nation have at length reached that higher plane of political science in which they can appreciate that, as Lord Beaconsfield well phrased it, "the health of the people is the first duty of the statesman." But it also indicates that long occupancy of the land by successive generations has, at length, overtaxed the regenerative and self-purifying energies of mother-earth, both air and soil and water, in numerous localities; and that extraordinary methods have become necessary in order to maintain the balance of power on the side of her life-giving rather than her death-dealing forces. In support of the first of my propositions, allow me for a few moments to transport you to one of the grand thoroughfares of ancient Rome, in the days when it was no vain boast that she was mistress of the world.

Sitting on this cool marble seat and listening to the plash and murmur of this magnificent fountain, one of the many which dispense their bounteous store of limpid mountain water to the thirsty inhabitants of the world's metropolis, at the rate of 322 gallons *per diem* to every man, woman, and child, we can watch at our ease the gay panorama of human life which constantly unfolds itself before our eyes under the refreshing shade of these towering palaces and temples of glittering marble. How motley is the scene! Patrician and plebian, freedman and slave, knight on prancing horse and travel-stained pedestrian, merchant, senator, tradesman, jeweled princess, and ragged but comely fruit-dealer, all moving hither and thither in apparently inextricable confusion. And the differing nationalities afford a no less interesting object of study than the complexity of ranks and callings. East and west, north and south, burning desert and frozen sea, have contributed the tintings of their varying climates to the countenances we gaze upon—from the jetty Ethiop to the ruddy athlete of the North—and costumes as various and bewildering as their physiognomies and complexions. And then the jargon of sound! Every man in his tongue wherein he was born—beside the richly-rolling Latin of the Roman and the Tuscan, the harsher accents of the Parthians and Medes and Elamites, and the dwellers in Mesopotamia and in Judea and Cappodocia, in Pontus and Asia, Phrygia and Pamphylia, in Egypt, and in the parts of Libya about Cyrene, strangers in Rome, Jews and Proselytes, Cretes and Arabians—we do hear them

speak. Looking upon this wonderful representation in miniature of all the peoples of the earth, and remembering that each new type of face stands for a nation conquered and tributary, can we but ponder in amazement on the stupendous power thus displayed, and on the character of the intellect and the nature of the national organization which yielded this power, and thus asserted itself over all other intelligences and all other political organizations? But as we sit and chat, or meditate the problem, sounds of martial music are borne upon the vexed air, and as they draw nearer and one after another of the jostling crowd catches the blare of the trumpets, an air of expectancy begins to manifest itself. Those whose business is not too urgent stop and become lookers-on like ourselves; urchins seek vantage-ground on pedestals and balustrades and cornices; and soon the stragglers in the street are forced aside to make way for the approaching pageant. First we see two lictors with their fasces, (the axe in the bundle of twigs—an emblem of authority still familiar to the eye) on their shoulders, who force the crowd aside and cry as they go, "Give way, good people, give way." Following the musicians with their attendant rabble, march three public slaves in rich uniform, and behind them a chariot in which sit two men of distinguished mien and thoughtful countenance, dressed in the ordinary garb of the private citizen, with some inconspicuous badge of office. One of them dictates as he rides, while the other makes rapid notes upon a tablet which he has drawn from the fold of his toga; but he is constantly compelled to suspend his labor of composition, and courteously acknowledge the acclamations of the gazing public. He is evidently a popular favorite, this grave, dignified man of business. Bright eyes "rain influence" upon him, and hoarse voices applaud his name.

But while we are gazing after him, a long retinue is passing before us. A second chariot, with two other men of refined appearance, also carrying tablet and styles, has gone by, and now we see a regiment—not of soldiers, but evidently, from their uniformity of garb and the implements which they bear, public officials and employès—divided into five companies of about one hundred men each, with officers leading them—some bearing the badges of civic functionaries and some those of the imperial household, all well clad, and those who carry implements of labor, sturdy, well fed, handsome fellows. A singular procession. Who can this great magnate be? Evidently not a military hero, although his bearing is somewhat martial. Let us ask this urchin, who has got tired of gazing, and is splashing his friend the other side of the fountain, "Boy, is that the Emperor?" He shows all his white Italian teeth, as with a merry laugh, he shouts back: "No, indeed, my good gentlemen, far from it. That is His Excellency, the Consul of the Waters. May all the gods bless him." And seeing by the puzzled look upon our faces that we are entire strangers, he obligingly explains: "Don't you know, old fellow? The Chief Engineer of the Water Department. He's going out to inspect the 'Virgin.'" We are still more in the dark, until he informs us that the "Virgin" is the aqueduct which

supplies the soft and limpid water most in favor at the public baths. He further tells us that the gentleman with His Excellency was the chief architect, and the two in the chariot following, their private secretaries, and modestly adds: "And now, perhaps, the gentlemen will give us an obolus to buy some plums."

This, then, was the honor bestowed upon—this the rank accorded to—officers of the public health in ancient Rome. Have we not here one solution of the problem which was occupying us when our attention was called away by the approaching procession? Was not Rome great, powerful, the mistress of nations, because her men individually were strong and vigorous in body and in mind? And were they not thus strong and forceful because their government cared for the public health, lavished money on water-supply and sewers, and adequately paid and justly honored those to whom she confided the supervision of these important interests?

If it is true, as has been said, that there never was a land where, more than at Rome, the good of the State as a whole was the aim of every citizen, on the other hand it is true that no State of antiquity made such ample and lavish provision for the protection of the lives and health of its citizens. The temple of Hygieia was assigned a most prominent position in the city. Her priests were among the most venerated of their order, and her shrines were thronged by the best educated and most thoughtful of the grave and reverend seigniors of the city. The sources of rivers, fountains and springs were all consecrated to some divinity with peculiar sacredness, and guarded from all pollution. Such an epidemic as that of Plymouth would have been impossible from such a cause in ancient Rome.

What better demonstration of the truth of my second proposition, viz: that a decent regard for the laws of public health is forced upon us by the inability of the earth to regenerate the enormous mass of filth with which we are overwhelming it, than the mention of that ill-fated mountain hamlet! It is but a type of a hundred, nay, thousands, of others, large and small, which require but a spark to produce among their citizens an explosion, besides which that of Hell-gate was but a tempest in a tea-pot. And woe unto us if we neglect the warning! Sodom and Gomorrah, cities of the plain, were not more surely doomed to utter destruction and desolation for their moral nastiness than we shall be for our physical nastiness. It was not the fire and sword of the Goth, but the plague, the Black Death, and a hundred other forms of pestilence, that laid Italy waste and made of Rome a heap of ruins. When the fires went out on the altars of Hygieia, and cleanliness became a sin, then it was that populations vanished like a dream, and habitations of men became the prowling places of wild beasts.

Contrast for a moment imperial Rome, munificently providing for the support and comfort of the head of the Water Department, crowning him with honors that gave him a rank among her highest dignitaries, and the metropolis of one of the greatest States of the Union, grudgingly doling out to the same functionary a salary just sufficient to enable him to main-

tain his family in respectability, and the result of the comparison is hardly flattering to the boasted civilization of the nineteenth century.

When, some two or more years since, I was endeavoring, under instructions from the American Medical Association and the Medical Society of this State, to create an interest in the movement in favor of the State Board of Health, I wrote to that distinguished medical author and military hygienist, Dr. John L. Leconte, among others, to beg him to aid in the effort. He replied by sending me a number of copies of a paper read by himself before the American Public Health Association, entitled, "Sanitary Problems: The Proper and Rational Method in which Municipal Boards of Health should be Organized." In what I have to say, I shall not scruple to borrow from his valuable essay, and I wish, at the same time, to add my tribute to his memory, as that of a man devoted to his calling, his kind, and his God.

The first point that I would make in reference to the organization of local boards of health is that politics, in the bad American sense of the term, should be utterly excluded in selecting the material for them. If there is a place where politics has no business, it is emphatically a health board. The fitness of the individual, and not his opinion on the tariff or his value as a ward worker, should be the test. And I may be pardoned here for digressing a moment to call attention to the fact that the Governor of this State, in his nominations for membership to the State Board of Health, has acted, at least in part, on this principle, by showing an utter disregard of the party affiliations of his appointees.

It follows from this dogma, which I regard as fundamental, that boards of health should not, where it is possible to avoid it, be elected by the people, certainly never in large cities. The smaller the number of voters, other things being equal, the more likely will the nominees of any local office be to possess uprightness and respectability character.

Secondly, boards of health should consist principally of physicians, for, as Dr. Leconte well says: "It is obvious that the proper execution of legal or political duties, which arise from purely human adjustments of interests, requires a very different kind of mind and a distinct method of education from those which are necessary to interpret, for the benefit of the community, the laws of nature, or, as I would prefer to express myself, the laws of God as manifested in the material universe. The priests of nature, the men of science, who carry on unceasing war against the four great Bogies, (as Charles Kingsley calls them in that delightful grown-up child's book, the 'Water Babies,') self-will, ignorance, fear, and dirt, are not educated by the processes of the common school, nor are they elevated to position by the votes of their fellow-citizens."

Nor should what are called medical politics, the influence of cliques, or of schools and dogmas, be allowed to interfere. The medical members of the board should be physicians, graduates of a respectable regularly chartered school, of not less than three years, standing in the practice of their

profession, and wherever it is practicable, men who have more especially devoted themselves to the study of sanitary science. With a majority of such men composing it, the board will be able to lead, and not, as too often happens, be compelled to follow the public at large in sanitary knowledge and action.

But thirdly, if it is important that a majority, or a considerable proportion, of the board should be medical men, sanitarians by education and profession, it is quite as essential that they should not all be physicians. At least one of its members should be a man eminent among his fellows for prudence and judgment in trade and commerce. Doctors are proverbially poor business men; they do not even conduct their own business affairs prudently and rationally, and the best doctors, those who devote themselves most unsparingly to the good of their patients, are often the most careless and improvident in pecuniary matters. Emergencies constantly arise in which there is an apparent conflict between the interests of commerce and those of health. There should be some one on the board to represent the commercial side of the question, so that unnecessary restrictions may not be put upon trade.

In the fourth place, as the board depends upon the local municipal authorities for the money to carry on its work, and the ordinances to make it effective, and as it is extremely desirable that there should be complete harmony of action and sentiment between the two bodies, it is well that there should be a representation of the one in the other; that one member of the board should be also a member of the municipal council. The functions of these three classes of members will be in brief: the first, to decide and order what is necessary to be done for the protection of the public health; the second, to devise and carry out the means of executing the orders with the least inconvenience and expense to the community; and the third, to procure the necessary appropriations for the purpose.

Fifthly, it will be essential to the practical working of the board that it shall employ a paid agent, who shall devote as much of his time as may be necessary to inspections and investigations of the sanitary conditions of the locality, and to carrying into execution the orders of the board. This individual should be the most trusted and respected physician and best instructed sanitarian in the place who can be induced to accept the position, and his salary should be commensurate with the amount of labor imposed upon him. He should be styled the health officer of the city or town; should be the executive officer of the board; should meet with it and have a voice in its deliberations, although it is perhaps wiser that he should not have a vote.

Finally, (and let it be remembered that I am describing an ideal board in the fair land of Utopia,) every member of the board should receive proper and adequate, I would even say, generous compensation for the time and labor which he devotes to its work.

It must seem almost incredible to intelligent foreigners that, while mu-

nicipal officers performing only legal, and even clerical, duties of a comparatively low order, requiring neither education nor any very high degree of intelligence or sagacity, receive salaries and emoluments as large as that of the Governors of our States, those men upon whom devolves the protection of our health and our lives against the pestilential effluvia of a dense aggregation of human beings are expected to perform their labor gratuitously. Can it surprise us that the work is not always well done?

Of how many members shall the board consist? In some States the model Board consists of six appointees, with the mayor added as presiding officer. In others the limits are from three to seven. I should say that the body should not be so large that any member can shirk his duty on the ground that there are enough to attend to it without him, nor on the other hand so small as not to afford a sufficiently wide range of thought and opinion. Three is certainly very small; seven is unnecessarily large, and may be unwieldy; five appears to me a just mean, avoiding both extremes.

I have thus sketched rapidly and roughly what suggest themselves as the essential features of a scheme for local boards of health. How far is the plan practicable? For all cities of whatever size, I think entirely so. In point of fact, a careful study of the legislation upon the subject in our State reveals the fact that our Assembly has anticipated me in most of the provisions which have been proposed. The act of the 23d May, 1874, section forty-six, provides that "the city councils of any city of the third class in which there does not now exist a board of health organized according to law shall have power to create a board of health as hereinafter provided," while that of the 11th April, 1876, extends the same provision to cities of the fourth and fifth classes. To refresh your memories, I will recall to you that cities of the first class are such as have a population exceeding 300,000; cities of the second class, a population exceeding 100,000; cities of the third class, a population exceeding 30,000; cities of the fourth class, a population exceeding 12,000, and cities of the fifth class, a population exceeding 10,000, this last being the limit below which a city charter cannot be petitioned for. Philadelphia is, of course, the only city of the first class, and Pittsburgh, if I mistake not, the only city of the second class existing, or likely, for many years, to exist, in the Commonwealth. Both of these cities have long been blessed with boards wisely organized and efficiently administered. From the law of May 23, 1874, prescribing the form of organization for city boards, I make the following extracts:

First. The board of health shall be composed of five members, and shall be constituted as follows: The mayor of such city, who shall be president *ex-officio*, and four to be appointed by the council; the term of office of said members shall be two years; the members of said board shall serve without compensation.

Second. A majority of the whole number of members shall be a quorum; they shall have power to appoint a health officer, a clerk, and as many ward or district physicians as they may deem necessary.

Third. Councils may grant such board power to abate and remove all and every nuisance in such city, and assess the cost and expense of the same upon the property, to regulate the construction and arrangement of water-closets and privy vaults, to create a complete and accurate system of registration of marriages, births, deaths, and interments, for purposes of legal and genealogical investigations, and to furnish facts for statistical, scientific, and particularly for sanitary inquiries, to visit houses suspected of infection, and "make all necessary investigations by inspection, and, on discovering that infectious or contagious disease exists, to send the person or persons so diseased to the pest-house or hospital."

"The council may grant power to make and pass all such orders and regulations as they shall, from time to time, deem necessary and proper for the public health, and for the prevention of diseases; said orders and regulations, when adopted, shall have all the force and effect of ordinances of such city." Section four gives ample power for the abatement of all nuisances.

Section five empowers the mayor and makes it his duty to detail from his police force or to newly appoint, whenever, in the opinion of the board of health the public health and sanitary condition of the city require it, a police force, which, when so detailed or appointed, shall be known as the "sanitary police." Said sanitary police, whose numbers are to "be determined by the board of health," to be subject to the exclusive direction and control of said board, for the enforcement of proper sanitary measures, and for the promotion of the public health.

The penalty for violations of this act or of any order, law, or ordinance made under or referred to in it, whether active or passive, resulting from ignorance or intention, in the way of neglect, of obstruction, or of interference, is fine and imprisonment, or both, such fine not to exceed one hundred dollars, and such imprisonment not to exceed ninety days.

Section nine declares that it shall be the duty of the council of any city, upon application and certificate from the board of health, to pass the necessary appropriation ordinances to pay the expenses of the board.

The act of May 5, 1876, makes it the duty of all such city boards "to furnish separate books, in which shall be registered, in the manner hereafter directed, the returns made to said boards of the marriages which may be contracted, and the births and deaths that may occur in said cities, making it binding upon every clergyman, magistrate, physician, midwife, clerk, or other official or professional attendant, to make reports of such occurrences and acts under penalty."

This is an admirable enactment, but no such provision exists save for cities. Hence, even if every city in the Commonwealth had complied with the spirit of the law by establishing a board of health and adopting the prescribed system of registration (which, unfortunately, is very far from being the case,) the results, as far as State registration of vital statistics goes, would be too meager to be of the least value. It is evidently of the

first importance, then, both from a statistical and a sanitary point of view, that the benefits of this law, in the main eminently wise and judicious, should be extended to the entire population of the State, whether living in rural districts or aggregated into villages. How far is this possible? The first question which meets us in this inquiry is as to the geographical area over which a local board can efficiently exercise its functions of supervision, inspection, and abatement—obviously it must not be too large. The size of our counties, equaling that of some States of the Union, and of some principalities of Europe, makes them very undesirable as sanitary districts, and it is probably well that the bill to create a State Board of Health which contained a clause establishing county boards, and which was before the Legislature a few years ago, failed, as it would probably have been, in that feature at least, inoperative. The laws already existing make a certain amount of provision for the health interests of those living in incorporated boroughs or villages, but for those inhabiting unincorporated villages, or the country, no health legislation exists beyond such as is conveyed in the act to create a State Board of Health. The State Board has already had complaints made to it of petty nuisances in rural sections and villages, but it would manifestly be impossible for it to attend to such complaints to any extent, nor, indeed, is that the object of its creation. I mention the fact simply to show that there is a felt want for local boards throughout the country. By the act of April 1, 1884, the number of inhabitants of any town or village requisite to enable it to apply for an act of incorporation is three hundred. It will rarely happen, except in the immediate vicinity of large cities, that in any collection of people, permanently resident, smaller than this, a sufficient number of individuals will be found who have at once the qualifications and the inclination to supervise sanitary work. But, this limit being reached, the principal citizens beginning to appreciate the necessity for taking matters into their own hands and assuming the functions of local self-government, the time has also arrived when it has become at once their privilege and their duty to provide for the systematic protection of the health and lives, as well as the goods and chattels, of their community. The officers of such an incorporated village or borough are a burgess and town council, consisting of five members. Among the powers vested in these corporate officers, are certain of a sanitary character, "to make all needful regulations respecting vaults, cess-pools, sinks, drains," to prohibit and remove any nuisance or offensive matter, whether in the highways or in public or private ground, to make such regulations relative to accumulations of manure, compost and the like in barns, stable-yards and other places, and to prohibit the keeping of hogs within the borough. "To prohibit, within the limits of the borough, the burial or interment of the deceased persons," and "to make such other regulations as may be necessary for the health and cleanliness of the borough." Also, to provide a water-supply for the use of the inhabitants and to make needful regulations for its protection. In point of fact, the burgess and town council constitute

the board of health with all the necessary powers—and it is easy to see how, with very slight modifications, the law intended for cities might be made to apply to them. We have not here the necessary material for the composition of our model board. There are not physicians enough of the character indicated in any such small aggregation of individuals to fill the bill. If in every village we can find one such, we shall be more than fortunate.

Under our present loose system of medical education and registration, men are not wanting who are at the same time practicing medicine and practicing upon the credulity of the public, whose more fitting occupation would be holding the plow or wielding the blacksmith's hammer—men who, so far from being learned, do not possess even the rudiments of an English education. A man who will begin cholera with a "k," and end it with a "y," and gives it the generous allowance of two "l's," is not the man the community would naturally look to for advice as to keeping this dread enemy at bay. Hence, in a village or borough where only the representative of our disgraced profession is such as I have alluded to, it would be manifestly unwise to insist that even one member of the board, or the health officer himself, should be a physician. The council is already in existence; its functions apart from this are not numerous or engrossing, its power is absolute. The burgess himself will certainly fill the post more efficiently and more acceptably than this ignorant and dishonest pretender to an honorable calling. But the unincorporated villages and rural districts are still unprovided for. The only remaining geographical division, with fixed officers, is the township; and this seems to afford a good basis for health organization. It is not too large to be easily supervised, and its care will naturally include that of all the unincorporated villages within its limits. Its legal officers are: First, an assessor; second, two supervisors; third, a treasurer; fourth, a clerk, and fifth, three auditors. In an area of this size, with a reasonably full population, it ought not to be difficult to find two respectable physicians capable of conducting sanitary investigations. The two supervisors, treasurer, and clerk, associating with themselves one physician as a member of the board, might appoint another as health officer of the township, while the senior or chief supervisor should be the president of the board. Such a body would be thoroughly conversant with the necessities of the community, and being already, in part, existent, would possess the confidence of its constituents. The same general powers should be conferred upon them as upon the councils of boroughs, and they could then fall back upon the law creating the city health boards for a detailed schedule of their duties; thus we should have a complete sanitary system, whose organization would permeate every remotest corner of the State, reporting regularly to the central head, and receiving from it in return information, aid, countenance, and its support in the discharge of its important and beneficial functions.

If the members of a city board are not to be elected, how shall they be

appointed? The law says by the city councils. This is giving the councils too much control. "Some years ago," says Dr. Richardson, of the Philadelphia Board of Health, in his recent admirable address on hygiene before the State Medical Society, "the health authorities of a large town in one of our Western States undertook to abolish pig-styes in the built-up portions of jurisdiction. Unfortunately, this improvement was so far in advance of public sentiment that two or three of the aldermen of the place, being disturbed by it in the fattening of the usual winter supply of pork, called together their fellow-legislators, and incontinently abolished the entire board of health. Even in our own State, the health officer of an important borough told me that, a few years since, when, by great exertions and at considerable expense, he had prevented an epidemic of small-pox, he was, after all danger subsided, publicly denounced for his costly sanitary measures, which were, according to these malcontents, proved useless by the fact that the disease did not spread, and also that no inconvenience had been suffered by the town's people from the few cases which did occur."

The appointment, then, manifestly should not rest wholly with councils. At least a portion, the greater portion, of the members should be appointed by the courts, and not removable at the will of councils. But how are the courts, learned as they may be in the law, to judge of the qualifications of physicians who may be recommended to them for filling these responsible positions? Let the county medical societies nominate for each position to be filled two or more physicians, from the number of which the judge or court shall be required to make his selection; and in a similar spirit, and with a like regard for the public good, let the chamber of commerce, board of trade, or other respectable commercial organization, nominate candidates for the business man of the board. Thus men will be secured for the places, whose peers have passed upon their fitness, and the possibility of mistaken appointments will be greatly diminished.

In conclusion, I desire to say that I have presented these thoughts in a tentative and not in a dogmatic spirit. Our sanitary system is waiting to be moulded. It is desirable that no false steps should be taken at the outset, and I cordially invite criticism and suggestion from all interested in this momentous question, whether members of this learned and highly intelligent body, whose courtesy in permitting me to appear before it, desire gratefully to acknowledge, or others who interest themselves in the good of their fellows, and believe that in this dispensation of good-will every man is his brother's keeper.

APPENDIX B.

REPORTS ON THE SANITARY CONDITION OF CITIES AND TOWNS.

1. Report on the Sanitary Condition of Harrisburg. Dr. Hugh Hamilton, of Harrisburg.
2. Report on the Sanitary Condition of Towanda. Dr. E. D. Payne.
3. Report on the Sanitary Condition of Millerstown. Dr. S. D. Bell.
4. Record of Causes of Death in Philadelphia from January, 1884, to January, 1885. Secretary.
5. Report of the Health Officer of Erie.

HARRISBURG, PA.—ITS SANITARY CONDITION.

By Hugh Hamilton, M. Sc., M. D., *Harrisburg, Pa.*

The forces of immigration, and the directions of trade, form *depots* of merchandise, usually upon the banks of navigable streams, and in mountainous districts not far from easy passes through their ranges. Harris' Ferry, so situated, grew from a frontier trading-post, in 1726, to a town of importance, by its selection as capital of the Commonwealth of Pennsylvania, and the subsequent distribution of railroads to the Mississippi valley, and the concentration of their bread-stuffs traffic through it to the five cities upon the Atlantic seaboard. The development of local mineral resources, with active coal, iron, and steel industries, added an impetus to its growth, until to-day it boasts of a population of upwards of forty thousand.

The natural physical history; its artificial physical aspects; and the domestic statistics of the population; severally engage one's attention.

The physical characteristics embrace the geography, climatology, hydrography, geology, botany, and topography. The city lies in[1]

Latitude *N.* 40° 15′ 44″.

Longitude *E.* 0° 7′ 04″ from Washington, D. C., United States, or

" *W.* 76° 52′ 56″ from Greenwich, England.

About 320 feet[2] above mean ocean level, Atlantic City, New Jersey.

[1]U. S. Coast Survey post in eastern part of Capitol Park, September, 1877.

[2]Vol. N, Second Geological Survey of Pa., p. 133. Harrisburg, 1874. Also Pa. R. R. Eng. office.

It is built upon the eastern bank of the Susquehanna river, a broad, shallow stream of a mile or more in width, filled with islands of more or less permanence. The local rain-falls readily affect the volume of water. In general storms the water rises four to six feet in twenty-four hours, and as rapidly falls; during the spring and autumnal freshets, twenty feet is the mean maximum.

The "river bank," at its highest point, is 44.07 feet above low water.[1] Three bridges cross the Susquehanna here, having, respectively, twelve, twenty, and twenty-four piers. In low water, (May to October,) there is a ford with an average of ten inches. The irregular depth of the water allows the bottom to become filled with weeds and mosses; the islets formed are covered with "*water*" birch, (*Betula-nigra*,) and numerous species of the *Salicaceæ*, etc., etc., while the shallow bars support a luxurious growth of wild rice, cress, and spear-grasses; in the more sluggish pools the fragrant "white pond lily," (*Nymphæa odorata*,) grows to a width of six or seven inches. The average depth of water at the piers of the new South Pennsylvania railroad bridge is for the summer (April to October) not above two feet.[2] The "*datum*" course of masonry in the South Pennsylvania railroad bridge is two hundred and ninety-one feet above mean ocean level.[3] Four hundred and twenty-three millions of gallons flow at the rate of four and one fourth miles per hour, at *datum*, past these piers.

At three feet above this *datum*, or two hundred and ninety-four feet above mean ocean level, eleven hundred and eighty-six millions of gallons, at five miles an hour, flow towards the Chesapeake bay. The wind was in the prevailing direction, north-west by west, when these observations were made.

The average temperature is 50.75° Fah., (1.053° C.,) and the rain-fall is 29 to 30 inches, (0.737 to 0.762 meters.) The permanent humidity is noted by the *frost-depth* in plumber's trenches during the winters of 1883–4–5–6[4]. It is 15 to 20 inches, (0.37 to 0.50 meters.)

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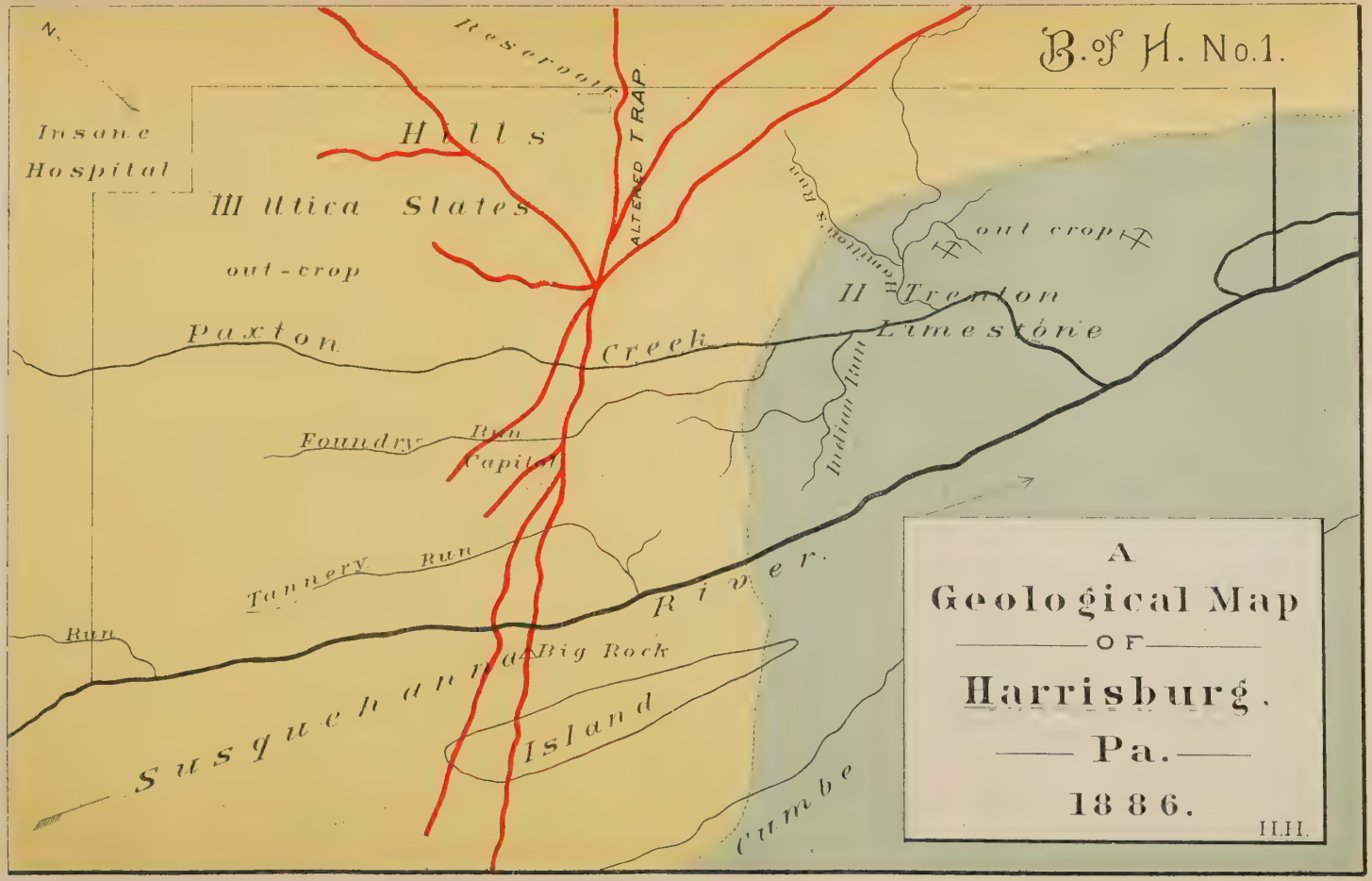
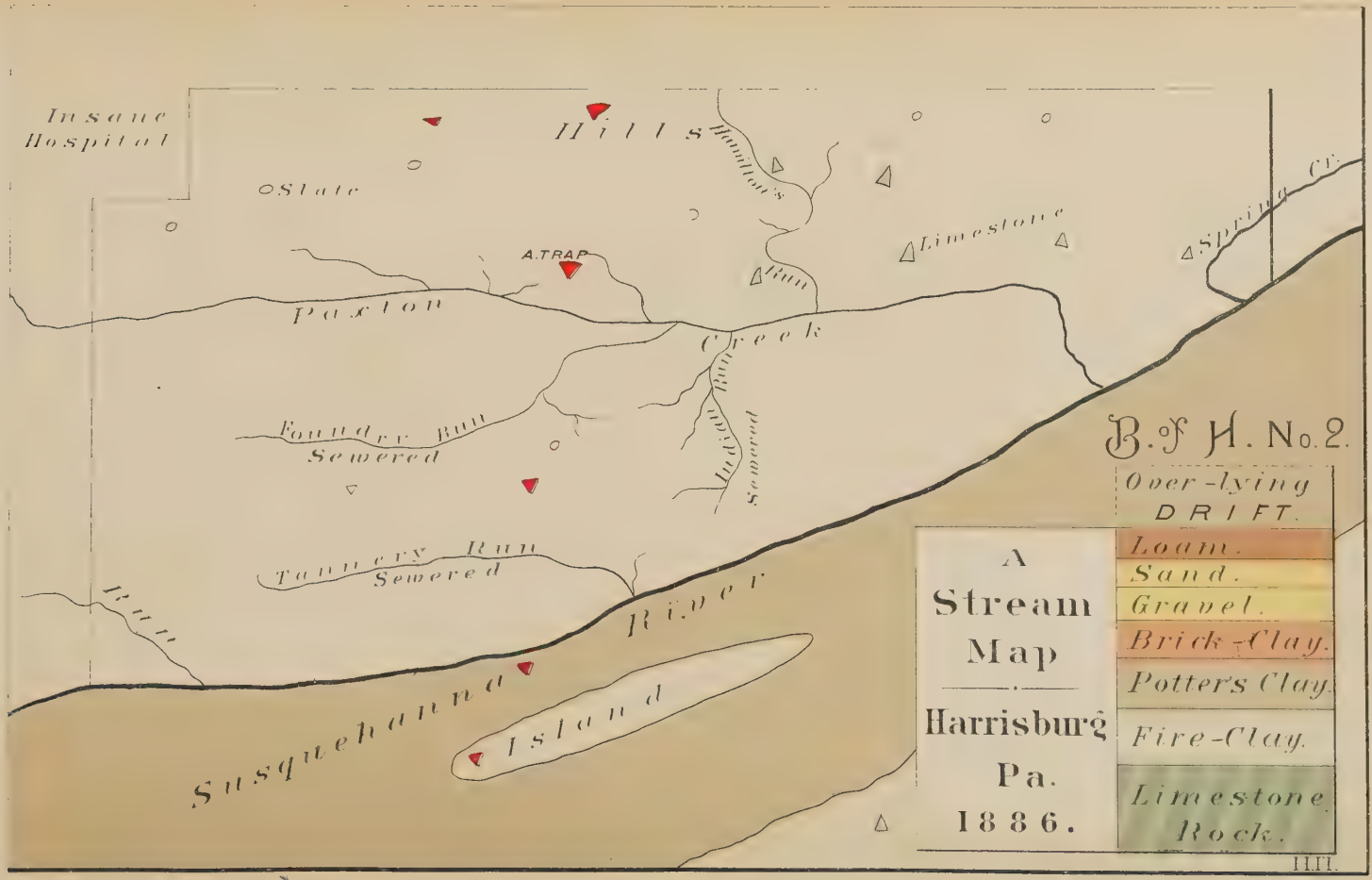
[1] Low water is 290 feet above mean ocean level.—*U. S. Coast Survey*

[2] Through the politeness of Mr. Ives, engineer in charge construction of railroad (South Pennsylvania) works.

[3] United States Coast Survey.

[4] Transactions Medical Society of Pennsylvania, Vol. XVII, p. 316. Philadelphia, 1885.

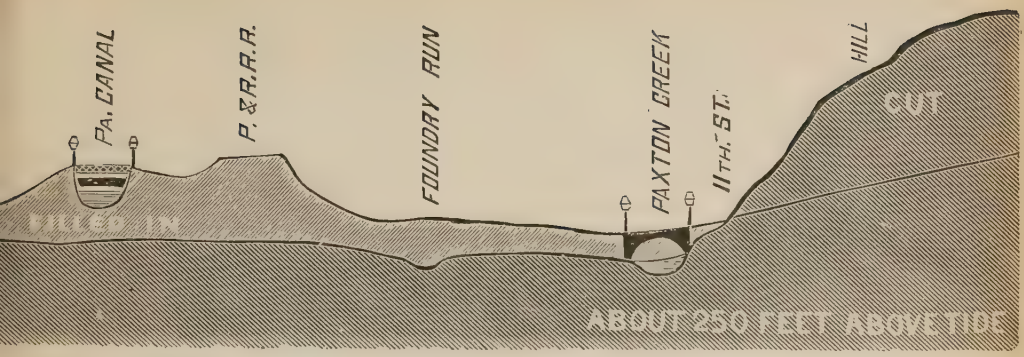

B. of H. No. 1.
N.
Insane Hospital
Reservoir
Hills
ALTERED TRAP
Miltica Slates
out-crop
Paxton
Creek
Foundry Run
Capitol
Tannery Run
Run
Susquehanna
River
Big Rock
Island
Trenton Limestone
out crop
Indian Run
Crumbe
A
Geological Map
OF
Harrisburg,
Pa.
1886.
H.H.


Insane Hospital
State
Hills
Hamilton's
Run
Limestone
Spring Cr.
A. TRAP
Paxton
Creek
Foundry Run
Sewered
Indian Run
Sewered
Tannery Run
Sewered
Rutt
Susquehanna
River
Island
B. & H. No. 2.
Over-lying
DRIFT.
A
Stream
Map
Harrisburg
Pa.
1886.
Loam.
Sand.
Gravel.
Brick-Clay.
Potters Clay.
Fire-Clay.
Limestone
Rock.

PROFILE, MULBERRY STR

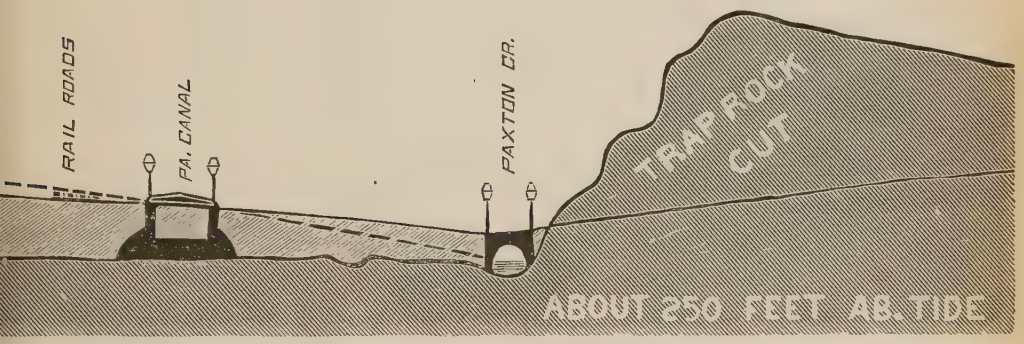
PROFILE, MARKET STR

HERR STREET, H

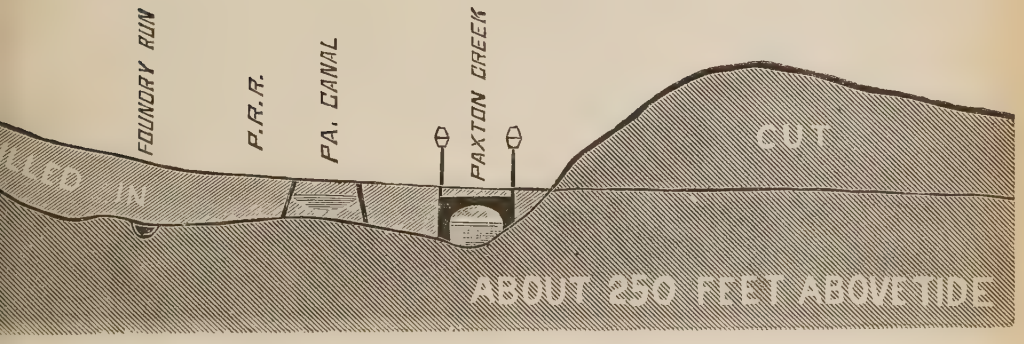


HARRISBURG, PA., 1885.

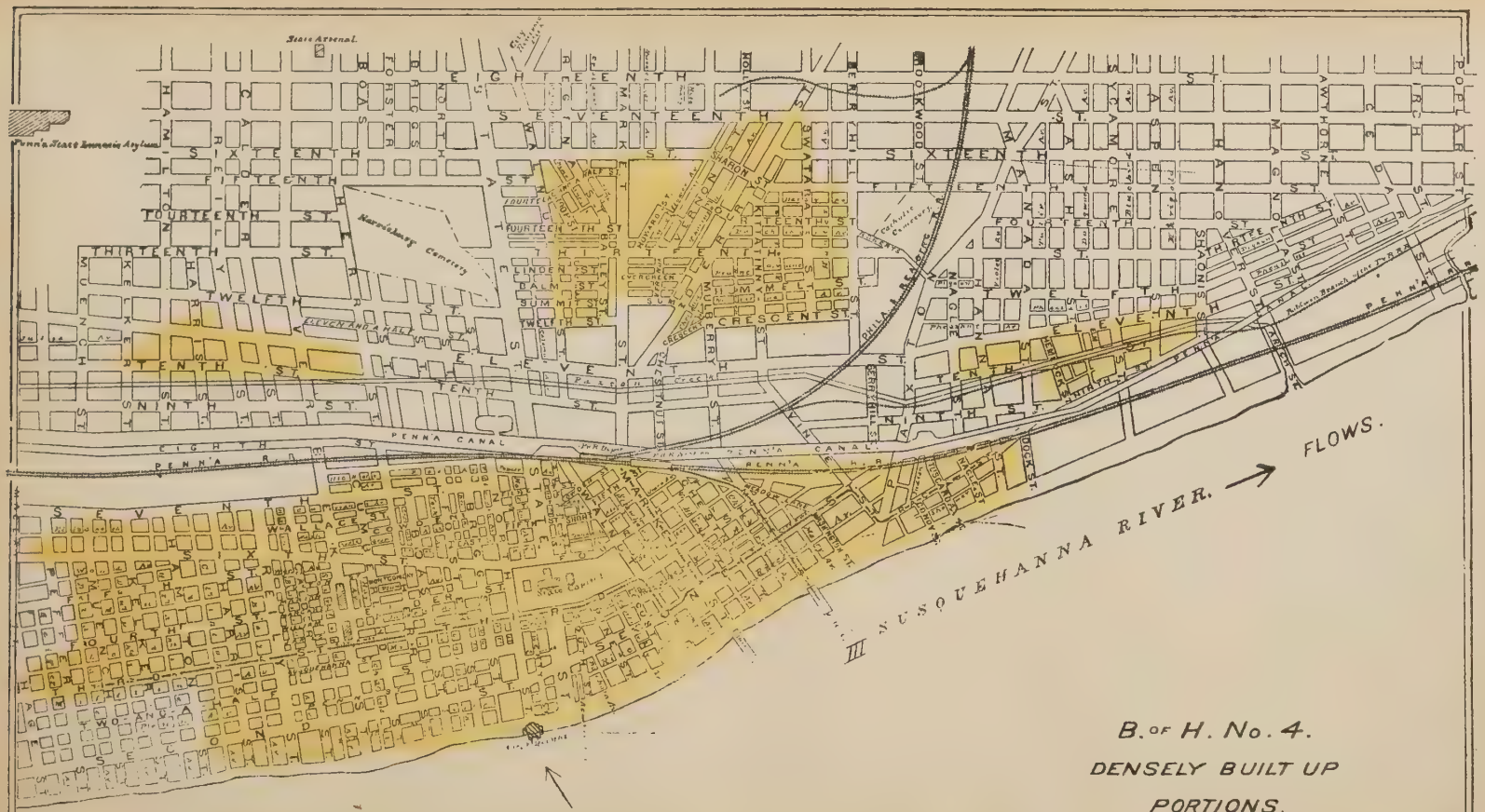
THE RIVER IS SHORTENED TO BRING IT INTO VIEW



HARRISBURG, PA., 1885.



BURG, PA., 1885.



CITY OF HARRISBURG—1885.

TABLE I.

Months.	*Deaths.*[1] 1884–5. *Average.*	*Rainfall.*[2] 1880. *Total.*	*Temperature.*[2] 1871–80. *Average.*
January,	27	2 to 4	30° Fah.
February,	23	2 to 4	32
March,	29	2 to 4	35
April,	28	3 to 4	45
May,	32	1 to 2	60
June,	25	2 to 4	72
July,	34	4 to 6	75
August,	45	4 to 6	70
September,	25	2 to 4	65
October,	40	2 to 4	50
November,	22	2 to 4	40
December,	30	2 to 4	32
	30	29 to 30	50.75

The geological formation consists of three stratified rocks, and an *altered* trap-rock, forming an important feature in the landscape, hidden under the drift left by the river in its recedence to its present channel. The direction, or "*strike*," of the stratified formation is north-east by east 56°, and the slope, or "*dip*," from 40° to 75°. The "altered trap" produces a stellar fracture, about three fourths of a mile from the river. It is a hard, uncouth stone, and originates nearly at the junction of the two formations —the Trenton (II) limestone and Utica (III) slates composing our area. The undulating hills north-east of the town are due partially to this irruption. The "Yellow Cottage" stands upon the highest point of this "trap" rock, while its next lowest eminence is crowned by the Capitol. Its presence in the river is known as the "*Big Rock.*" (See map No. 1.)

The obstruction afforded by this "trap" rock to the flow of waters, and consequent subsidence, caused extensive bars of sand, gravel, &c. One "bar" forms the present Ridge avenue (or Sixth street)—the road which led from the capitol to "*Camp Curtin*," in 1861. The soil covering the geological structure, on the elevated portions, is a fertile loam, about ten inches in thickness, with a good turf; a firm, *smooth* sand next below; then a *sharp* sand upon a gravel of increasing coarseness as one descends; beneath all, a strong, firm clay, containing sufficient iron to impart a beautiful red when burned for industrial uses. Potter's and fire-clays underlie these deposits in certain localities. (See map No. 2.)

The main portion of the municipality is erected upon a plateau formed by the eastern slope of a long hill, which had its summit in Cumberland county, crowned by earthworks made in 1863, locally known as "Fort Washington," and its foot at the base of Allison's hill. (See map 3, section.)

The river in its decedence cut a channel forty feet deep and one mile

[1] Mayor's office, and several cemetery companies.

[2] Professional papers, United States Signal Service, by Lieut. A. W. Greely, (of Arctic fame.)

wide in a westerly convex curve, flowing at the foot of the Cumberland county hills, separating this long slope from its summit. This subsidence left a ridge, extending in a northerly direction, upon whose highest part the capitol is built, while on a lower portion the United States public buildings are situated. The depression between "Capitol hill" and "Allison's hill" is occupied by a sluggish stream, called the Paxton creek, which forms the natural course for drainage to the north-eastern and southern portions of the town. (See "Stream" map.)

The artificial topography is due to the changes consequent upon the erection of houses, making of streets, sewers, public works, canals, and railroads. The total area is 1,895 acres; densely populated, about 600 acres. A second area, known as East Harrisburg, (or Allison's hill.) contains a densely built up portion of 200 acres. (See map No. 4.)

The original borough, 1791, (useful for building purposes,) was a triangular space, bounded on the east by Meadow lane, on the north by South street, and south by Broadway, or Front street. (See map No. 5.) Walnut street was the rectangular base line for streets south of it; the streets north of Walnut street in order to conform to the course of the river have their rectangular base line on South street. (See map No. 5.)

These streets were all 60 to 80 feet wide, 500 feet apart, and bisected by alleys 20 feet wide, equally. All the streets and alleys in the old borough have been macadamized to the depth of 27 to 30 inches.[1] (See map, street section, No. 13.) With the progress of internal improvements, more territory was demanded, which has been added several times in the century, as follows:

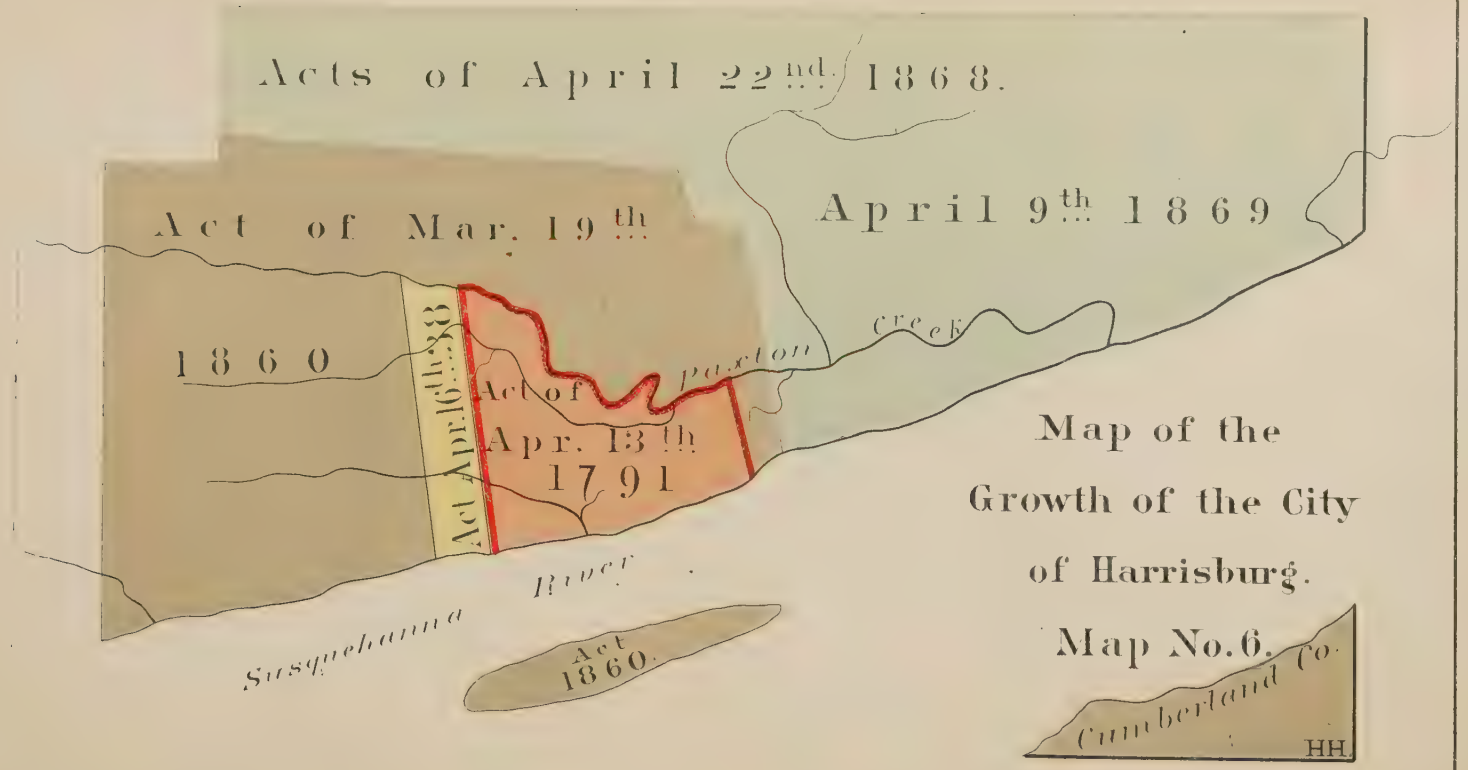
Original plot confirmed, act April 13, 1791.
Second addition, act April 16, 1838.
Third addition, act March 19, 1860.
Fourth addition, act April 22, 1868.
Fifth addition, act April 9, 1869. (See map No. 6.)

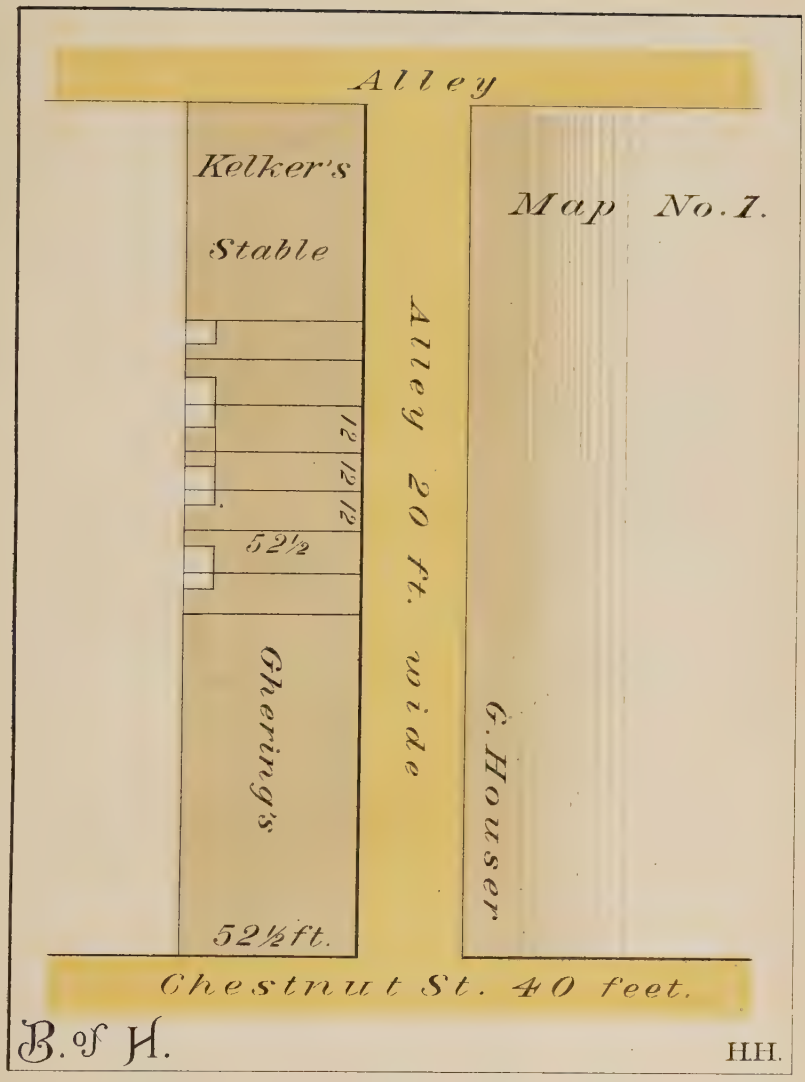
Under most of the *streets* run the several gas and water pipes, at varying depths. The approaches of canals and railroads are *in* and *upon* embankments, making material changes in the plot of the town.

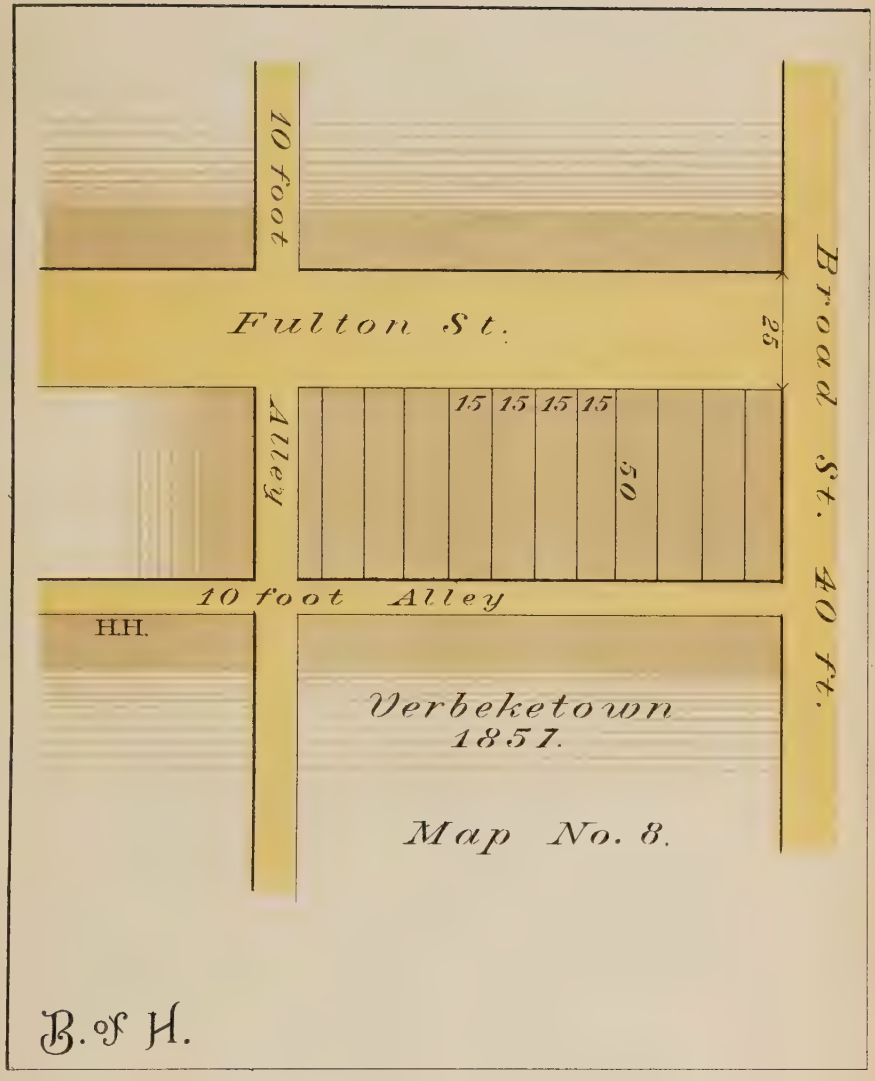
The original lots were 52½ feet by 210 feet deep to an alley 20 feet wide. The plateau formed a dry place on which to build, while the treacherous character of the Paxton creek aided in confining the village to this high land; consequently, these larger lots were utilized by lot-owners to such an extent as to become the residence of ten or twelve times the number for which they were originally designed.

Through "influential" citizens the generic name *alley* was changed to "avenue" in order to prove an enticing snare to vanity, so that now four or five "houses" adorn the street front, while the "avenue" is beautified by houses upon lots 10 feet by 50 feet; the areas are in some instances but forty square

[1] General Borough Laws, April 22, 1823.

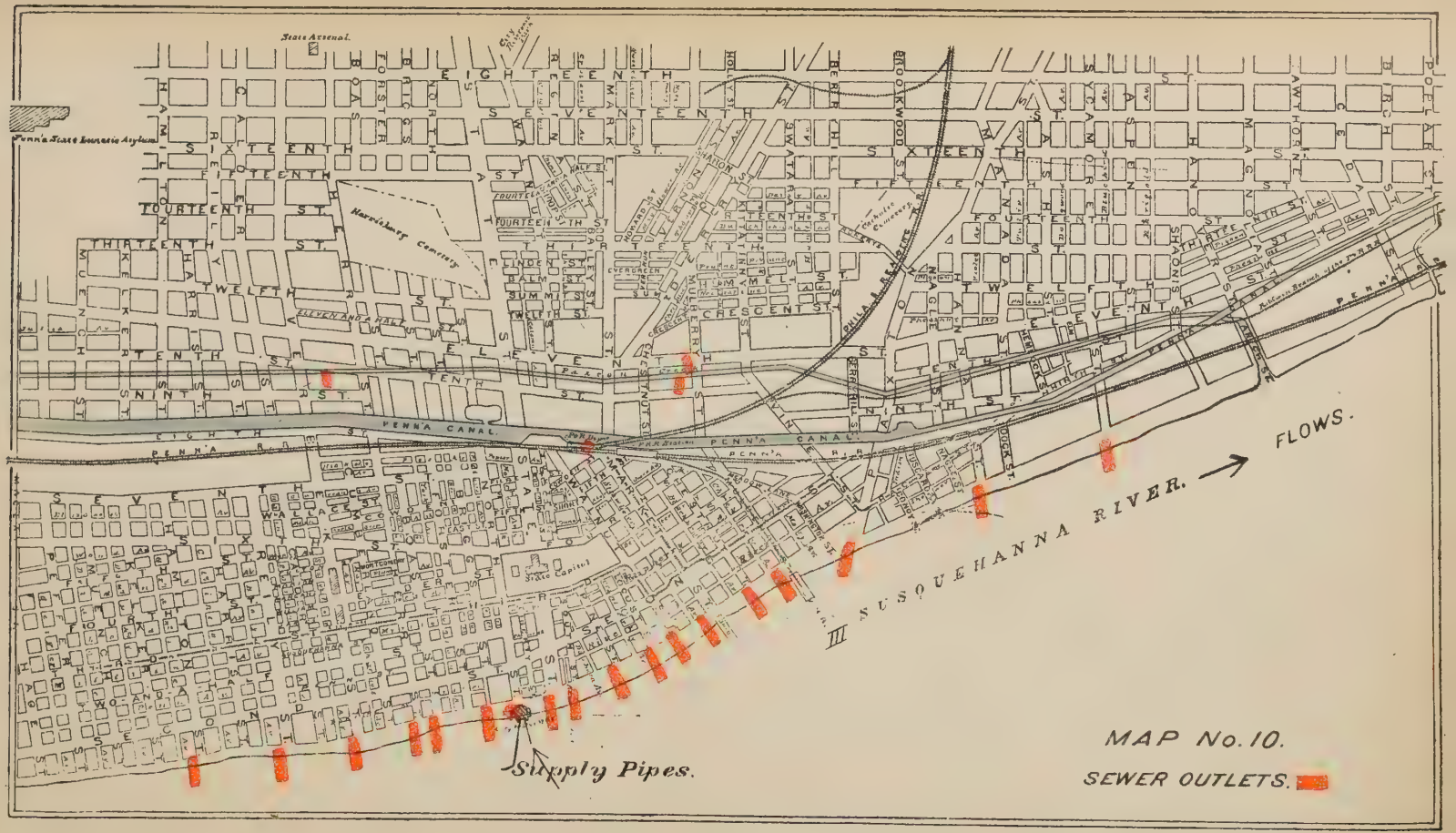

Acts of April 22nd. 1868.
Act of Mar. 19th
April 9th 1869
1860
Act Apr. 16th 38
Act of
Apr. 13th
1791
paxton
creek
Susquehanna
River
Act
1860.
Map of the
Growth of the City
of Harrisburg.
Map No. 6.
Cumberland Co.
HH


Alley
Kelker's
Stable
Map No. 1.
Alley 20 ft. wide
12
12
12
52½
Gherings's
G. Houser
52½ ft.
Chestnut St. 40 feet.
B. of H.
H.H.


10 foot
Fulton St.
25
Broad St. 40 ft.
Alley
15
15
15
15
50
10 foot Alley
H.H.
Verbeketown
1857.
Map No. 8.

B. of H.

TOPOGRAPHICAL SKETCH OF HARRISBURG, PA. 1886.



CITY OF HARRISBURG—1885.

feet. This unsanitary method has proved seductive to tenants and a little mint to the owner. (See map No. 7.)

The addition of "Verbeke town" in 1857, and subsequently included in plot of 1860, was originally laid out on narrow streets 25 feet wide from house to house, with lots 12 feet by 50 feet, "to afford poor people a home," so I was told; then lots ranged in prices from fifty dollars to one hundred and fifty. The result was a class of unsightly shanties, providentially preserved from conflagration, while the breeding of immorality has not been less fertile than the prevalence of zymotic diseases. (See map No. 8.)

While in select council, it was my unpleasant privilege to be surprised at complaints of privies being placed upon surface drains over shallow pits, so that after heavy rains the *debris* from them was strewed in public gutters not far from market-houses. This information reached council in the latter summer months.

From looking over the maps, (topographical), No. 9, one is not unprepared to understand why so crowded a condition should have resulted from the moderate area of available land. This proved a tempting bait to avariciousness, while the lack of transportation added to it, materially assisted in circumscribing the population. The factories and shops are at the eastern part of town, while the residences are at the other; the recent street railway extensions have materially removed these objections. The property on the "hill" is the most healthful, but the insuperable barrier in the variableness of our "creek" requires a highway of ten or twenty feet high for a distance of half a mile to overcome it; this has been accomplished partially, and whenever street railway accommodation is made, the population of this portion of the town will increase immediately. It is liberally supplied with water and gas, and its sewer system has been diligently considered and carefully executed; consequently its salubrity will soon surpass its reputation for healthfulness.

The rain-fall in the town area is 1,160,000,000 gallons, while the annual pumpage is 1,720,000,000 gallons, making a total of 2,880,000,000 of fluid to flow through sewers.

The sewers are of circular section, and none are possessed of larger capacity than three feet. The earliest sewer is the one which has its outlet at Paxton street; it is two feet in diameter, in some of its sources laid within four feet of the surface. Draining a most populous area of quite one hundred acres. The faulty construction of its *outlet* allows the water to rush out of its *inlets* during freshets. The sewerage east of Market Square drains into Paxton creek. The sewers along the course of "Tannery" run empty into the river at Walnut street. The drains of "Foundry" run have their outlets in the creek. Four or five general sewers have their outlets in the Susquehanna river, above the water intake (see map No. 10.) The pipes which supply the pumping well are one hundred feet in the river, and are supposed to be beyond the reach of sewage contamination. At the source of these sewers are water-closets innumerable, and several

slaughter-houses. It behooves the councils to notice the fact and its vital importance to our future. The sewer question, owing to our improving condition, imperatively demands attention—many of them are faulty in construction and size, lacking conformity to the natural drainage and are ofter considered, when "out of sight, out of mind," until their neglected, unlovely character is manifest by the slaughter of our beloved ones.

The present water-supply is abundant, being from four to five millions gallons per day, put into a reservoir having a storage capacity of thirty millions gallons about two miles from the pumping-station, at an elevation of two hundred and ten feet above low water in the river at the pumps. The reservoir was completed in 1874, and is able to supply *clear* water owing to its excellent mechanical details, (see drawing No. 11.) This fact has saved this town from diarrhœal diseases, when the county has suffered. The water-pipe system is excellent, and sufficient for every purpose.

All corporation improvements are under the executive management of committees of councils for specific purposes, and are as efficient and economical as it is possible for such heterogeneous bodies to be. Their laudable ambition is hampered by constitutional and legislative enactments.

"For years systematic drainage has been urged, but without success, the enormous expense being the main hindrance." *The Morning Call*, June 20, 1885, Harrisburg, Pa.

The domestic statistics of the population embrace their places of residence, their diseases, the birth and death rate.

Owing to causes previously mentioned, the population became more dense than was desirable, giving rise to a disposition to secure a better home and its comforts; fortunately now moderate rents prevail, and enlightened landlords are building delightful homes having suitable sanitary arrangements.

Some time since, (within a year,) the police discovered an "improved" 20-by-100 lot, on north eleventh, with eight rooms and no yards, inhabited by a population of 36 persons, and because of its criminal character, destroyed it.

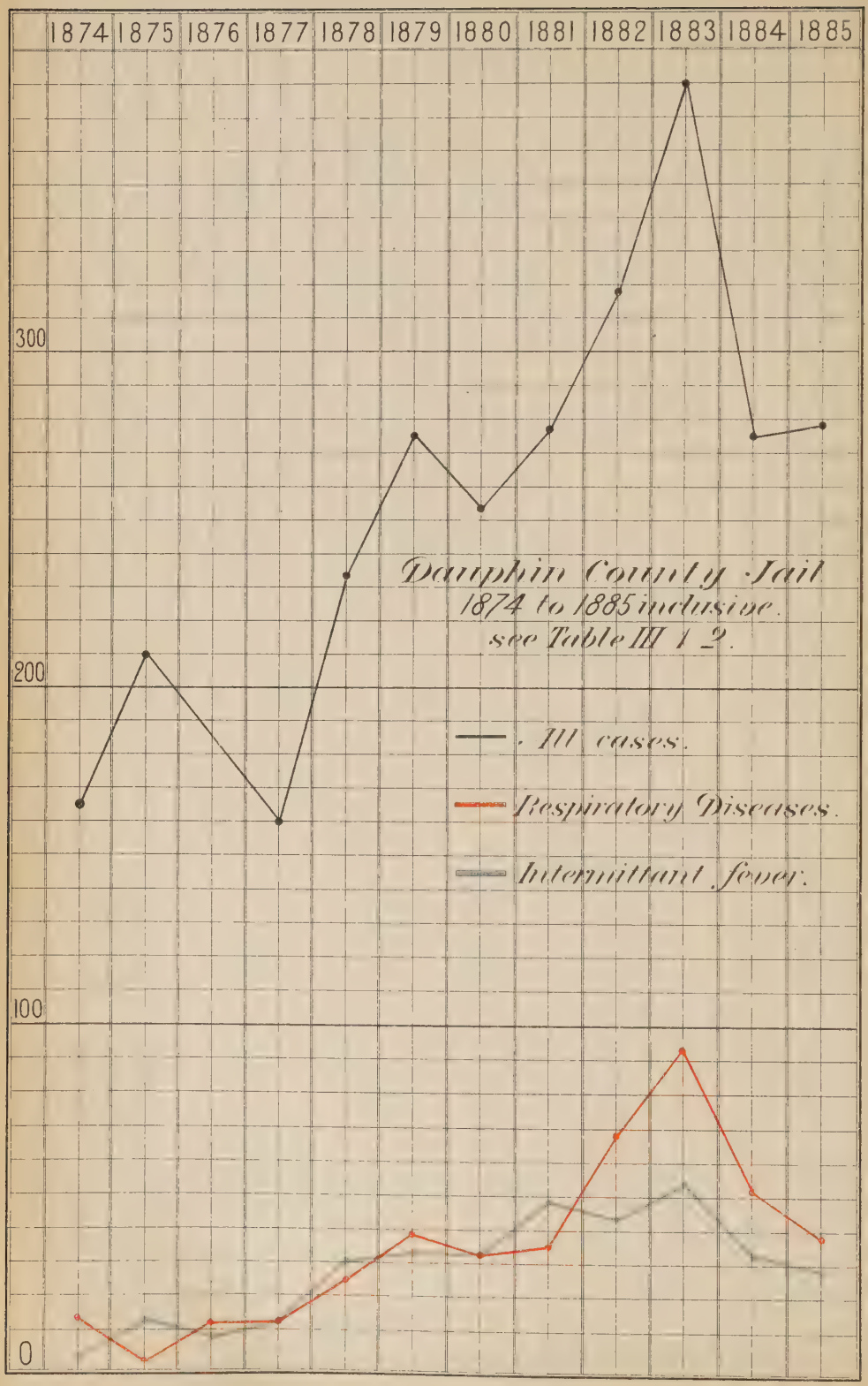
The overcrowding abuses observed, can be, by vigorous police scrutiny, easily remedied.

TABLE II.

	1883.	April 1, 1886.
The total number of buildings,	7,735	8,250
" brick "	3,000	3,516
" stone "	27	28
" other "	4,708	5,086
Used dwellings,	6,536	7,817
Stores and other uses,	1,199	
Population, white and colored,	38,462	40,488

The public health of the city has been frequently assailed by persons who

TOPOGRAPHICAL SKETCH OF ORIGINAL BOROUGH OF HARRISBURG, PA. 1785—96.


1874
1875
1876
1877
1878
1879
1880
1881
1882
1883
1884
1885
300
200
100
0
Dauphin County Jail
1874 to 1885 inclusive.
see Table III 1_2.
Ill cases.
Respiratory Diseases.
Intermittant fever.

have resided here a comparatively short time. The death-rate proves the charge of *serious* unhealthiness without foundation.

In 1754, pernicious intermittent fever attacked an Indian chieftain named Taunachisson here, and death resulted in a few days. In 1793, synchronous with an epidemic of yellow fever, at Philadelphia, this then small village was attacked, by a disease which so closely resembled it, that a writer of the time, Alexander Graydon, esq., in his "Memoirs," remarks upon it. Quartan ague also prevailed at the time. In 1796, the "ague" became so severe as to excite the towns-people respecting its cause, which they supposed to be a dam situated in Paxton creek (map No. 5) belonging to the Landis brothers. By voluntary subscription they raised £2633, 4s., 6d., and and purchased and destroyed the *source* of this disabling fever. Our *forefathers were* as alive to their sanitary welfare as *we are* to-day, and possibly *more so.*

The numbers of recruits thrown into "Camp Curtin" during the war 1861–65, rendered it peculiarly liable to infectious and contagious diseases, which exhibited alarming mortality until controlled by sanitary measures.

The detailed reports of Provost Marshal General's office speak of the following diseases for which rejections were made in conscription.[1]

TABLE III.

	Number.	Per cent.
Acute disease,		
Chronic "	22	2.63
Constitutional disease,	2	.24
Venereal "	20	2.39
Other "	132	
	176	
Accepted,	682	
Rejected,	176	
Conscription,	858	
Pulmonary disease,		1 to 2
Syphilitic "		.09
Disqualification general,		10 to 20

In 1872, an epidemic of *variola* visited the city, which was promptly resisted by the appointments of vaccine physicians for each ward, so that out of 670 cases in two years only 72 died.

The medical statistics of the county poor-house are so carelessly administered that there is only a mortality record kept. The prison, under care of Dr. Egle, is most carefully recorded, an average of —— years.

[1] Reports P. M. Genl's. office U. S. A., Med. Statistics, Vol. II, p. 688, Washington, D. C.

TABLE III 1-2.

Diseases in Dauphin County Jail from 1874 to 1885, inclusive:*

		1874 to 1885.
All cases of disease,		3,012
Total cases of fever,		470
Typhoid fever,	None.	
Paludal fevers,	163	
Intermittent fevers,	307	
Other fevers,	None.	
Diseases respiratory (acute),		422
" digestive organs,		293
Diarrhœas,	158	
Dysentery,	25	
Constitutional diseases (B),		389
Rheumatism,	186	
Phthisis,	61	
Total population,		1,306

In 1873, the Harrisburg hospital was founded, from which the local civil character of disease has been noted.[1]

It is, however, a casuality hospital, devoted to the interests of iron and steel factors and railroads centering here. Its dispensary is under contract from the directors of the poor of Dauphin county by the managers.

In stating the subject, the nomenclature of the National Board of Health[2] will be partially followed.

TABLE IV.

A. ACUTE DISEASES. B. CONSTITUTIONAL DISEASES. C. SPECIAL DISEASES.

TABLE V.

A. ACUTE DISEASES.
- I. FEVERS.
  - *a.* Typhoid.
  - *b.* Paludal.
  - *c.* Intermittent.
  - *d.* Others.
- II. RESPIRATORY DISORDERS.[3]
- III. DIGESTIVE DISORDERS.[4]
  - *a.* Diarrhœas.
  - *b.* Dysenteries.
- IV. CIRCULATORY DISORDERS.[3]
- V. URINARY DISORDERS.[3]
- VI. NERVOUS DISORDERS.[4]
  - *a.* Neuralgia.
- VII. POISONS.[3]

B. CONSTITUTIONAL DISEASES.
- I. TUBERCULAR DISORDERS.[3]
- II. RHEUMATIC DISORDERS.[3]

C. SPECIAL DISEASES.
- I. SEXUAL DISORDERS.[3]
- II. DERMATIC DISORDERS.[3]

TABLE VI.—*Medical Cases occurring in the Dispensary in eleven years were:*

A.	I.	Fever cases,		10,400
		Typhoid fever,	13	
		Paludal fevers,	10,172	
		Intermittent fever,	6,237	
		Other fevers,	215	
	III.	Digestive disorders,		652
B.	I.	Constitutional diseases,		
		Tubercular diseases,		255

*Through the politeness of Drs. Porter and Egle.

[1] Eleven Harrisburg Hospital reports.

[2] Supp. Bull. Nat. Board of Health, No. 9, October 29, 1880. Washington, D. C.

[3] Tabular tables of these diseases could not be made in time for the press.

[4] Only partially classified, from the same cause.

DISPENSARY, HARRISBURG HOSPITAL.

ALL MEDICAL CASES COMPARED TO NUMBER OF INTERMITTENT CASES.

TREATED IN DISPENSARY, 1873-83, INCLUSIVE. 11 YEARS.

The light line, in above diagram, denotes all Medical Cases in Dispensary in 11 years; the heavy line, Cases of Intermittent Fever.

IN-WARD, HARRISBURG HOSPITAL.

ALL MEDICAL CASES COMPARED TO CASES OF INTERMITTENT (IN-WARD) FEVER, IN 11 YEARS.

1873 TO 1883, INCLUSIVE.

The light line, in above diagram, denotes all Medical Cases in Hospital, in 11 years (Ave. 87); the heavy line, all cases of Intermittent Fever (Ave. 14).

DIARRHŒAL DISEASES OCCURRING IN HARRISBURG HOSPITAL.

The light line denotes Dispensary Cases; the heavy line, Hospital Cases.

PALUDAL FEVERS TREATED IN DISPENSARY, HARRISBURG HOSPITAL.

1873 TO 1883, INCLUSIVE.

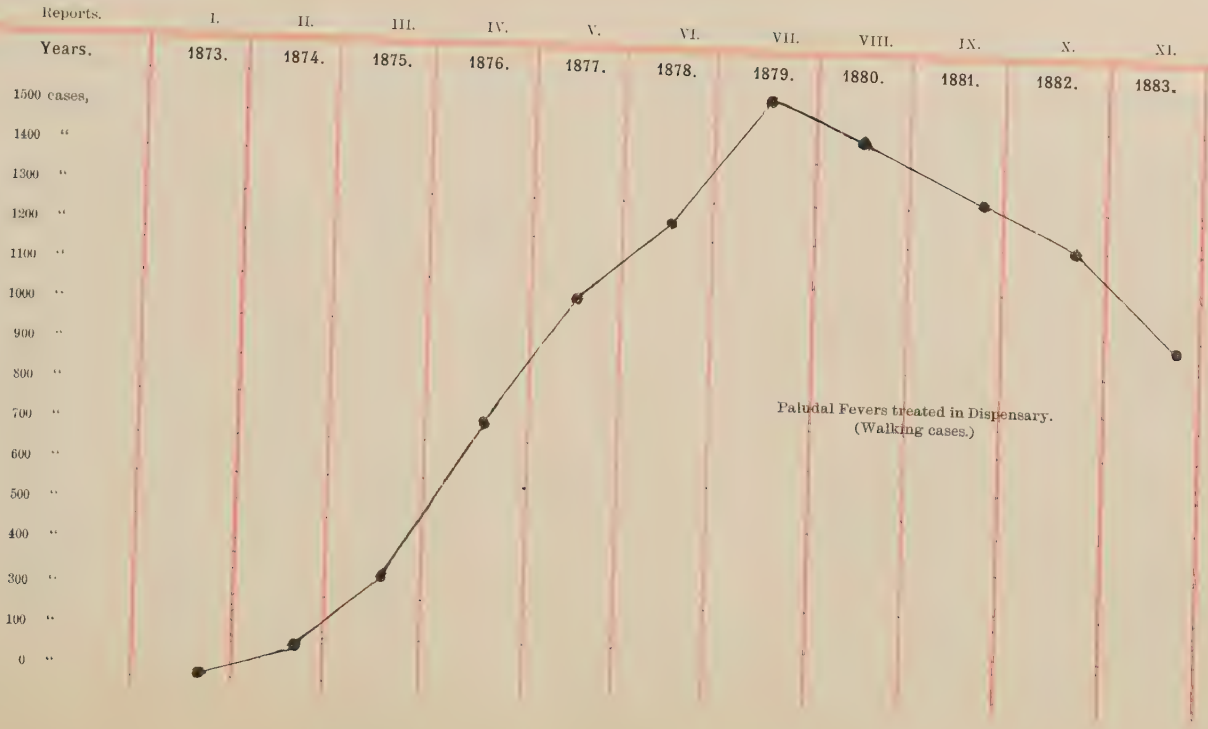


TABLE VII.—*Medical Cases occurring in the Hospital in eleven years.*

A.	I.	Fever cases,		384
		Typhoid fever,	8	
		Paludal fevers,	368	
		Intermittent fever,	147	
		Other fevers,		8
	III.	Digestive disorders,		45
B.	I.	Constitutional diseases,		
		Tubercular diseases,		46

TABLE VIII.—*All Medical Cases in eleven years were divided as follows:*

A.	I.	Fever cases,		10,784
		Typhoid fever,	21	
		Paludal fevers,	10,540	
		Intermittent fever,	6,374	
		Other fevers,	222	
	III.	Digestive disorders,		692
B.	I.	Constitutional diseases,		
		Tubercular diseases,		301

TABLE IX.—*Proportional Tables of all Medical Cases in Dispensary and Hospital for eleven years.*

	Total number.	Average per year.	Per cent.
All medical cases,	22,111	2,010	100
All fever cases,	10,784	980	48
Other cases,	11,327	1,029	52
All medical cases,	22,111	2,010	100
All paludal fevers,	10,540	958	47
Other cases,	11,570	1,052	53
All medical cases,	22,111	2,010	100
Intermittent fevers,	6,374	579	28
Other cases,	15,726	1,431	72
All fevers,	10,784	980	100
Paludal fevers,	10,540	958	97
Other cases,	244	22	33
All paludal fevers,	10,540	958	100
Intermittent fevers,	6,374	579	60
Other cases,	3,166	379	40
All medical cases,	22,111	2,010	100
Diarrhœal cases,	692	66	3
All medical (dispensary) cases,	21,244	1,931	100
All diarrhœal (dispensary) cases,	657	59	3
			97
All medical (hospital) cases,	887	80	100
Diarrhœal (hospital) cases,	45	4	5

The whole number of medical cases in dispensary in 11 years was	21,224
The whole number in (ward) hospital,	887
Total medical cases in 11 years,	22,111

Average medical cases in dispensary per year, ... 1931.3
Average medical cases in (ward) hospital per year, ... 80.6

Average of all MEDICAL cases, ... 2010.

The intermittent fevers visited Harrisburg very severely in 1793,[1] 1812,[2] 1830[3], 1854,[4] 1872.[5]

The foregoing tabulations show that the paludal or malarial fevers predominate, although from the reports the intermittents are not so very severe. The population has increased as follows, with a very moderate death-rate per thousand:

TABLE X.

YEAR.	Population	Deaths.	Births.	Ratio per 1,000 deaths.
1800,	1,472			
1810,	2,287			
1820,	2,990			
1830,	4,311			
1840,	6,020			
1845,[6]	6,193			
1850,	7,834			
1860,	13,405			
1870,	23,104	344		10.4
1880,	33,456	409		11.9
1885,[7]	40,488	398	920[8]	9.7

The difficulties of convincing a community of the duty to adapt itself to a system to prevent disease are numerous:

First. The value of property increases as the density of population surrounds it, and the avariciousness and selfishness displayed by holders in resisting improvement are sought by them in all legal conservatism.

Secondly. The invasion of the sanctity of home, the criticism and restriction of its domestic economies with the correction of many pernicious personal habits, most naturally give rise to resistance to successful sanitation.

Thirdly. The query, as old almost as Adam, "Am I my brother's keeper?" is significantly asked by those opposed to sanitary measures. The progress of morality and modern science, however, all point conclusively to our consequential responsibility for the well-being of our fellow; we have no more right to take his life by preventive disease than with a pistol, and scarcely with as much grace, if excusing our crime by not knowing the one *was dangerous*, or by not knowing the other *was loaded*.

[1] Yellow fever in Philadelphia at that time.
[2] After the second war with Great Britain, 1810-12.
[3] After construction of canals and public roads.
[4] After construction of railroads.
[5] After excesses of war, 1861-1865.
[6] Borough census.
[7] 1885 estimated.
[8] Births, Sanitary Police Adams.

Fourthly. The prosecution of sanitary law, to be effective, must necessarily be summary, and haste means considerable expense. All proper expenses should be borne by the Commonwealth, because the State is benefited thereby, both in men and material for use and defense.

This municipality cannot hide its procrastination under any pretense to feed its citizens *organized* matter likely from sewage dissolved in *clear* water. The sewerage system needs consummate attention and prompt but deliberate action to prevent outbreaks of scarlet fever and diphtheria which rage along the mud streets of *up-town.*

The Dauphin County Medical Society has had a committee on sanitation for *five* years, and endeavors to impress upon councils to pursue vigorously its suggestions. It has succeeded in having a standing committee of councils on sanitary affairs and tne services of two efficient officers.

Harrisburg is destined to become a large inland city from causes which led to its foundation, expressed in the commencement of this article.

THE SANITARY CONDITION OF TOWANDA.

Towanda, Pa., *October 1, 1885.*

Benjamin Lee, M. D.,

Secretary State Board of Health, Philadelphia, Pa.:

Dear Sir: I have received a copy of an act relative to the State Board of Health, approved June 3, 1885, and your circular of August 25, ult. I have read each carefully, and am glad to know that there is at least an effort made toward improving sanitary conditions under authority of State law.

Section six gives power to the State Board to abate nuisances where no local board exists, but if the local board neglects or refuses to act properly, or is only an advisory board in or to the council, and the council refuses to act, or deems the advice unworthy of action, what then? Or who is to decide whether necessity of action exists or not?

I feel great interest in this question, because this town is my home, and our conditions are as follows: Our soil is heavy clay, with underlying rock, from a few to many feet deep, the town being on a series of hills, gradually rising from the river. Only in spots can underlying sand and gravel be found, from twenty to fifty feet deep, which renders the construction of cess-wells partially unsafe or impossible; open gutters are, therefore, generally relied upon for the disposal of common kitchen slops. These, with few exceptions, are unpaved, and allowed to grow up with rank grass or weeds. Unsightly and unpleasant as they are, I think them safer than cess-wells in our soil, if nothing but kitchen slops pass into them. For

drain tubes from the kitchen to the gutter, glazed tile is used by many, but I fear wooden drains are in too common use. Could householders be persuaded to flush and disinfect their drains at stated intervals, I think much might be gained; but neglect, obstinacy, and ignorance are powerful factors to contend with. Upon most lots are placed a well and privy vault. From the character of the soil, the wells are almost of necessity supplied by surface water running in directly or by slow percolation through the soil. The vaults are not usually deep, four to six feet. Indeed, the deeper they are, the more water they hold.

The wells are usually near the house, and the vault is behind it, either directly or diagonally. Now, if a well will leach an area equal to its depth, it makes a near vault dangerous; but a greater danger is from these vaults, which are seldom or never cleaned, becoming overflowed by heavy rains and washing over the surface of the ground, and these washings finding their way into the wells. I have frequently told our people that if one vast vault was constructed, in the center of the town, and the contents of all the private ones emptied into it, they would not put up with it for twenty-four hours; yet they tolerate the smaller one, widely distributed, seldom or never cleaned, without any special thought of danger; or, if thought of it, no effort to avert it. Yet, even if the town could afford it, I should hesitate about recommending a general system of sewerage; because, if not properly constructed, with our heavy inclines, it might become a hidden instead of an open danger. Some of our houses have private soil drains from them, either carried directly to the river or opening into a common covered water drain.

The bank of the river is the common dumping ground for filth, garbage, and refuse of all kinds. Were this periodically or occasionally swept away by freshets in the river, it would not be so objectionable; but the current is deflected by an old dam at the lower end of the town, which has an opening on the other side, resulting in the refuse being left, and an eddy formed from near the middle of the town down to the dam. Below the dam are two filthy old canal basins. Now, apply to these conditions a southerly breeze and open doors and windows to our houses, and the result may be expected.

We have a system of water-works, contracted for by the borough authorities, but not yet accepted. Its conditions were sufficiency for fire purposes and purity for household uses. It is partly furnished from a water-shed of questionable character, and partly pumped from the river below the old dam. It passes through no proper filter, and, though taken into many houses, I do not think it fit for household uses. Our town has a population of about four thousand.

From the above conditions, can it be wondered that we suffer from catarrhal affections and diseases produced by filth? During the present season, it seems as though every third person has suffered from irritable

mucous membranes—either of the head, lungs, stomach, or bowels—and in some the whole mucous tract has been affected.

A few years ago, after an epidemic of diphtheria, I located an efficient cause at the very door of more than a dozen of the worst cases, while in others it was near by; yet we have a beautiful town, and one, aside from the condition of the soil, capable of good hygienic conditions.

Our health board is simply an advisory committee, appointed by the council from its own members, and I cannot remember when a physician has been on it. If a person complains to the council (to whom he looks for protection) for the abatement of a nuisance, he is generally advised to sue the one maintaining it in the courts.

To you, who are the Secretary of the State Board of Health, established for our common benefit, and in acknowledgment of your circular, I have ventured to write this long letter, hoping you may make such suggestions as may be for our good.

Very respectfully, &c.,

E. D. Payne, M. D.

The undersigned have read the letter of Dr. Payne, and fully concur in and approve his views.

D. N. Newton, M. D.,
S. M. Woodburn, M. D.,
Charles K. Ladd, M. D.,
J. W. Lyman, M. D.,
T. B. Johnson, M. D.,
F. G. Newton, M. D.

THE SANITARY CONDITION OF MILLERSTOWN.

Millerstown, Pa., *October 19, 1885.*

Benjamin Lee, M. D., *Secretary:*

Dear Doctor—Inclosed you will find a petition from the citizens of the borough of Millerstown, requesting you to do something toward having the town put in a better sanitary condition. This paper was handed to me this evening, with the request that I forward it to the State Board of Health. The fact of the matter is, that the town is in a very bad condition. The hotels empty their slops, &c., into drains that open in the streets under the side-walks. We have had an epidemic of scarlet fever, (I suppose not less than fifty or sixty cases,) and within a month I have had seven cases of typhoid fever, which seems to be now increasing every day. The town council have refused to take any steps in the matter. There ought to be some way to force the officers to have the nuisance removed. The population of the town is about twelve hundred.

Very respectfully,

S. D. Bell.

To the State Board of Health:

We, the undersigned citizens of Millerstown, Barnhart's Mills post-office, Butler county, Pa., do respectfully ask your honorable body to appoint a person or persons to inquire into the sanitary condition of said town, and also to appoint one inspector for same, as we believe the condition of said town warrants such action, and will ever pray, &c:

H. Hoyt,	J. C. Drixon,	W. L. Campbell,
W. P. McBride,	F. Aslett,	M. Dieter,
J. J. Westermann,	J. H. Sackey,	G. W. Hays,
R. F. Westermann,	W. Frederick,	G. W. Reiber,
A. W. Krept,	George Glass,	D. B. Campbell,
H. J. Myers,	J. Hollan,	Mrs. L. Temple,
C. H. Johnson,	E. E. Reep,	E. G. Frederick,
E. J. Calvert,	C. A. Eliason,	James McMichael,
S. Frankle,	Fred. Daum,	P. Cudick,
F. Temple,	S. S. Bell,	J. T. T. Tragin,
J. Formen,	A. Stewart,	P. A. Rattigan,
D. F. Barnhart,	John S. Hindman,	A. J. Alston,
P. Nieser,	Hays Brothers,	S. D. Bell, M. D.,
A. H. Simpson,	B. H. Griswold,	H. M. Shaw,
Perry A. Bell,	L. Array,	W. J. Logan,
Mrs. M. E. Logan,	J. F. Kemper,	D. S. Bell,
A. Hindman,	G. W. Reese,	J.B.Showalter,M.D.,
F. J. Byers,	G. P. Ladder,	H. Schultz,
Samuel Nuel,	L. Shook,	Oliver McMichael,
A. O. Hammerly,	George W. Amy,	H. Stahl.

RECORD OF CAUSES OF DEATH IN THE CITY OF PHILADELPHIA, FROM JANUARY 1, 1884, TO JANUARY 1, 1885.

CAUSES OF DEATH.	Total.	Males.	Females.	Boys.	Girls.	Under one year.	One to two years.	Two to five years.	Five to ten years.	Ten to fifteen years.	Fifteen to twenty years.	Twenty to thirty years.	Thirty to forty years.	Forty to fifty years.	Fifty to sixty years.	Sixty to seventy years.	Seventy to eighty years.	Eighty to ninety years.	Ninety to one hundred years.	One hundred to one hundred and ten years.	Adults.	Minors.
Total deaths,	19,999	10,230	9,769	4,977	4,391																	
Small-pox,	35	22	13	14	10	7	4	8	3		2	1	5	4	1						11	24
Measles,	96	45	51	45	51	23	34	32	7													96
Diphtheria,	680	335	345	330	339	25	100	318	191	30	5	3	5	2		1					11	669
Croup,	589	318	271	318	271	50	126	273	133	6	1											589
Scarlet fever,	540	268	272	262	263	31	83	235	145	22	9	13	2								15	525
Whooping cough,	107	43	64	43	64	63	24	18	2													107
Typhus fever,	2	1	1											2							2	
Typhoid fever,	662	352	310	89	112	2	5	22	35	45	92	229	113	58	29	18	12	2			461	201
Puerperal fever,	28		28		1						1	16	9	2							27	1
Dysentery,	59	28	31	9	8	8	5	1	2	1		4	5	7	5	12	8	1			42	17
Diarrhœa,	142	75	67	30	18	39	4	3		2		8	5	11	15	24	24	6	1		94	48
Cholera morbus,	31	11	20	1	3	1		1		1	1	2	3	5	3	8	5		1		27	4
Cholera infantum,	775	425	350	425	350	630	127	18														775
Remittent fever,	15	5	10	3	2	1	1	2	1			1	2	1	1	1	3	1			10	5
Cerebro-spinal meningitis,	124	62	62	53	51	30	17	22	14	16	5	5	8	2	2	1	2				20	104
Inflam. of stomach and bowels,	565	294	271	211	162	260	59	27	13	7	7	25	24	36	30	37	27	13			192	373
Congestion of lungs,	221	118	103	70	64	65	33	22	10	4		12	9	14	19	10	16	6	1		87	134
Tabes mesenterica,	16	7	9	5	8	9	3	1				2			1						3	13
Marasmus,	856	465	391	456	386	712	85	37	3	4	1	2	1	2	2	4	3				14	842
Convulsions,	846	445	401	441	379	557	130	96	34	2	1	12	18	1	1						26	820
Phthisis pulmonalis,	2,801	1,395	1,406	160	178	37	20	28	14	31	208	845	711	414	258	149	72	13	1		2,463	338
Pneumonia,	1,253	632	621	289	275	214	153	124	32	11	30	95	106	94	118	147	89	34	5	1	689	564
Disease of heart,	748	370	378	48	37	29	2	5	17	15	17	51	94	118	119	132	119	27	3		663	85
Old age,	795	278	517													13	304	388	84	6	795	
Sunstroke,	32	26	6	5	2	4				2	1	5	8	4	5	2		1			25	7
Unknown,	5	5		4		4								1							1	4

RECORD OF CAUSES OF DEATH IN THE CITY OF PHILADELPHIA, FROM JANUARY 1, 1884, TO JANUARY 1, 1885.

CAUSES OF DEATH.	Total.	Males.	Females.	Boys.	Girls.	Under one year.	One to two years.	Two to five years.	Five to ten years.	Adults.	Minors.	Total.	People of color.	NATIVITY. United States.	Foreign.	Unknown.
All causes,	19,999	10,230	9,769	4,977	4,391											
Specified causes,	18,478	9,868	8,650	4,957	4 373											
CLASSES—																
I.—Zymotic diseases,	4.456	2.310	2,146	1,685	1,519	960	538	970	.	1,112	3,342	.	160	3.865	550	60
II.—Constitutional diseases,	3 753	1,751	2,002	250	265	120	53	44		3,237	516	.	237	2 452	1,203	98
III.—Local diseases,	6.650	4,194	2,456	1.404	1,159	1,181	475	346	.	3,944	2,688	.	398	4,498	1,864	180
IV.—Developmental diseases,	1,040	411	629	133	98	219	10	2		809	231	. .	48	592	421	27
V.—Violent deaths,	793	586	207	119	55	19	26	26		590	293	.	12	424	323	46
ORDERS—																
I.—1. Miasmatic diseases,	4,142	2,114	2,028	1,663	1,572	944	532	968	.	902	3,240	.	136	3,865	550	60
2. Enthetic diseases,	54	30	24	25	16	3	2			13	41		12	49	2	3
3. Dietic diseases,	102	67	35	6	5	5	1	1	. .	91	11	.		42	46	14
4. Parasitic diseases,	1	1	. .			. . .			.	1	. .	. .		1		
II.—1. Diathetic diseases,	923	344	579	81	73	69	29	13	.	768	155	. .	23	533	362	28
2. Tubercular diseases,	2 830	1,407	1.423	169	192	51	24	31		2,469	361	.	214	1,919	841	70
III.—1. Diseases of nervous system,	2,121	1,125	1,096	459	359	357	151	48	. .	1,991	824		119	1,486	572	53
2. Diseases of organs of circulation,	353	159	194	17	16	4	4		. . .	303	50	. .	13	133	155	15
3. Diseases of respiratory organs,	2 154	1,150	1,004	575	525	502	251	223	.	1,052	1,101	.	154	1,582	515	57
4. Diseases of digestive organs,	1,191	609	582	283	211	312	65	41	.	644	587		52	827	341	27
5. Diseases of urinary organs,	634	381	253	62	44	6	8	30		516	118	.	39	395	221	23
6. Diseases of generative organs,	174		174	. .		. .	. .	. .		172	2	. .	8	107	60	5
7. Diseases of organs of locomotion,	10	5	5	3	. . .	. . .	.	. .	.	7	3	. .	. .	10		
8. Diseases of integumentary system,	13	9	4	2	1				.	10	3	.		13		
IV.—1. Developmental diseases of children,	231	133	98	133	98	219	10	2	. . .	. .	231		10	231		
2. Developmental diseases of adults,	14		14							14	. . .	.	1	9	5	
3. Developmental diseases of old people,	795	278	517	.					.	795			37	352	416	27
4. Diseases of nutrition,	1,339	700	639	579	477	903	90	39	.	283	1,056		88	1,176	152	11
V.—1. Accident or negligence,	13															
2. Homicide,	20	16	4	2	1	1	.	1	.	17	3	.	. .	8	11	1
3. Suicide,	90	53	37	1	2	. .	.	2	. .	85	5	.		53	37	
4. Violent deaths, not classed,	362	302	60	60	18	5	. .	12	. .	264	98	. .	177	169	16	

CLASS I.—Zymotic diseases,	4,456	2,310	2,146	1,685	1,519	960	538	970		1,112	3,342		160	3 865	550	60	
Order 1.—Miasmatic diseases,	4,142	2,114	2,028	1,663	1,572	944	532	963		902	3,240		136	3 701	454	26	
Small-pox,	35	22	13	14	10	7	4	8		11	24	35	3	26	9		
Measles,	96	45	51	45	51	23	34	32			96	96	5	94	2		
Scarlet fever,	540	268	272	262	263	31	83	235		15	525	540	4	520	19	1	
Diphtheria,	680	335	345	330	339	25	100	318		11	669	680	18	659	21		
Quinsy,	2		2		2	1					2	2		2			
Croup,	589	318	271	318	271	50	126	273			589	589	5	579	10		
Whooping cough,	107	43	64	43	64	63	24	18			107	107	18	104	3		
Typhus fever,	2	1	1							2		2		2			
Typhoid fever,	662	352	310	89	112	2	5	22		461	201	662	17	450	204	8	
Erysipelas,	69	37	32	18	15	28		2		36	33	69	1	51	15	3	
Puerperal fever,	28		28		1					27	1	28	3	20	8		
Carbuncle,	6	3	3							6		6		3	3		
Dysentery,	59	28	31	9	8	8	5	1		42	17			32	23	4	
Diarrhœa,	142	75	67	30	18	39	4	3		94	48		5	90	49	3	
Cholera morbus,	31	11	20	1	3	1		1		27	4		1	13	17	1	
Cholera infantum,	775	425	350	425	350	630	127	18			775		46	774	1		
Intermittent fever,	5	3	2	1	1			1		3	2			43	1		
Remittent fever,	15	5	10	3	2	1	1	2		10	5			12	3		
Rheumatism,	18	9	9	2	1					15	3		1	11	7		
Cerebro-spinal meningitis,	124	62	62	53	51	30	17	22		20	104	124	3	111	11	2	
Pyæmia,	62	38	24	13	9	4	2	7		40	22		3	43	17	2	
Septicæmia,	95	34	61	7	6	1		5		82	13		6	62	31	2	
2.—Enthetic diseases,	54	30	24	25	16	3	2			13	41		12	49	2	3	
Syphilis,	54	30	24	25	16	3	2			13	41		12	49	2	3	
3.—Dietic diseases,	102	67	35	6	5	5	1	1		91	11			42	46	14	
Purpura and scurvy,	14	7	7	5	5	5	1	1		4	10			12	2		
Alcoholism,	88	60	28	1						87	1			30	44	14	
4.—Parasitic diseases,	1	1								1				1			
Thrush,	1	1								1				1			
CLASS II.—Constitutional diseases,	3,753	1,751	2,002	250	265	120	53	44		3,237	516		237	2,452	1,203	98	
Order 1.—Diathetic diseases,	923	344	579	81	73	69	29	13		768	155		23	533	362	28	
Gout,	2		2							2				1	1		
Dropsy,	361	174	187	69	64	61	28	10		228	133		18	237	113	11	
Anæmia,	32	13	19	6	6	6	1	3		20	12		3	24	8		
Cancer,	476	134	342	2	2					472	4			234	247	15	
Gangrene,	47	21	26	2	1	2				44	3		2	32	13	2	
Leucocythemia,	5	2	3	2						3	2			5			
2.—Tubercular diseases,	2,830	1,407	1,423	169	192	51	24	31		2,469	361		214	1,919	841	70	
Scrofula,	13	5	8	4	6	5	1	2		3	10		4	12	1		
Tabes mesenterica,	16	7	9	5	8	9	3	1		3	13		3	14	2		
Phthisis,	2,801	1,395	1,406	160	178	37	20	28		2,463	338		207	1,893	838	70	
CLASS III.—Local diseases,	6,650	4,194	2,456	1,401	1,159	1,181	475	346		3,944	2,688		398	4,498	1,864	180	
Order 1.—Nervous diseases,	2,121	1,125	1,096	459	359	357	151	48		1,291	824		119	1,486	572	53	
Apoplexy,	394	195	199	3	2	2	2			389	5		18	197	184	13	
Paralysis,	437	195	242	16	19	6	3	8		402	35		19	274	149	14	
Insanity,	20	8	12							20			2	9	9	2	
Tetanus,	30	18	12	11	8	12	1			9	21		3	26	4		
Congestion of brain,	363	217	146	133	101	125	47	34	17	129	234		10	292	63	8	

INTERMENTS IN THE CITY OF PHILADELPHIA—*Continued.*

CAUSES OF DEATH.		Males.	Females.	Boys.	Girls.	Under one year.	One to two years.	Two to five years.	Adults.	Minors.	Total.	People of color.	NATIVITY.		
													United States.	Foreign.	Unknown.
CLASS III, Order 1.—*Continued.*															
Locomotor ataxia,	6	3	3	.	. . .	. . .		. .	6	. . .	.	1	4	1	1
Neuralgia,	39	21	18	1	. .	. .	.	. .	38	1	.	3	24	14	1
Shock,	3	1	2	. .	. .	. .	. .	. . .	3	. .	. .	1	3	.	.
Sunstroke,	32	26	6	5	2	4	.	.	25	7	. .	1	12	17	3
Brain diseases, etc.,	797	441	356	290	227	208	98	6	270	527	. .	61	645	141	11
2.—Diseases of organs of circulation,	353	159	194	17	16	4		4	303	50	. .	13	183	155	15
Pericarditis,	39	21	18	5	7	1		2	27	12	.	3	24	13	2
Aneurism,	26	20	6	. .	. .	. . .		. .	26	. .	.	6	18	7	1
Hypertrophy of heart,	36	23	13	4	1	. .	.	. .	31	5	.		19	15	2
Embolism,	11	4	7	. .	1	. .	.	. .	10	1	.	. .	7	4	
Heart disease, etc.,	241	91	150	8	7	3		2	209	32	.	4	115	116	10
3.—Diseases of respiratory organs,	2,154	1,150	1,004	575	525	502	251	223	1,052	1,101	.	154	1,582	515	57
Laryngitis,	51	23	28	19	25	12	6	18	7	44	.	1	46	5	
Bronchitis,	376	192	184	152	120	157	51	51	104	272	.	33	314	58	4
Pleurisy,	21	19	2		1	1			20	1	. .	3	5	10	6
Pneumonia,	1,253	632	621	289	275	214	153	124	689	564	.	90	879	339	35
Asthma,	46	21	25	2	3	1		2	41	5	. .	2	16	28	2
Asphyxia,	46	25	21	24	21	41	2	1	1	45		7	46		
Lung disease, etc.,	361	208	153	89	80	76	39	27	190	171		18	276	75	10
4.—Diseases of digestive organs,	1,191	609	582	283	211	312	65	41	644	587	.	52	823	341	27
Pharyngitis,	1	1		1			1			1	. .		1		
Gastritis,	565	294	271	211	162	260	59	27	192	373	. .	35	460	102	3
Peritonitis,	192	77	115	18	26	8	1	6	148	44		9	119	61	12
Ascites,	18	8	10	3	1	. . .	.	.	14	4	.	. .	6	12	
Ulcer of intestines,	14	8	6	2	2	. .	.	3	10	4	.	. .	9	5	
Hernia,	29	10	19	5	. . .	4	. .	1	24	5	.	3	11	17	1
Intussusception,	23	8	15	5	5	7	1	.	13	10	.	1	15	8	
Jaundice,	47	26	21	16	12	25	1	.	19	28	.		37	10	
Liver disease, etc., } Spleen disease, } Hepatitis,	260	155	105	22	11	17	2	4	224	36	. .	4	144	71	9
	42	22	20	. . .	2	1	. .	. . .	40	2	. .	. . .	21	19	2

5. Diseases of urinary organs,	634	381	253	62	44	6	8	30	516	118		39	394	221	23
Nephritis,	124	68	56	17	13	2		13	94	30		7	74	43	7
Bright's disease,	317	181	136	28	21	1	3	10	288	49		22	201	109	7
Diabetes,	29	21	8	3					26	3		1	16	10	3
Cystitis,	30	25	5	1					29	1		1	15	14	1
Kidney disease, etc.,	52	38	14	4	5	2	1	1	31	21		2	32	20	
Uræmia,	82	48	34	9	5	1	4	6	68	14		6	56	21	5
6.—Diseases of organs of generation,	174		174						172	2		8	107	60	5
Ovarian dropsy,	3		3						3				3		
Diseases of uterus, etc.,	171		171						169	2		8	104	60	5
7.—Diseases of organs of locomotion,	10	5	5	3					7	3			10		
Synovitis, Joint disease,	10	5	5	3	70				7	3			10		
8.—Diseases of integument,	13	9	4	2	1				10	3			13		
CLASS IV.—Developmental diseases.															
Order 1.—Developmental diseases of children,	231	133	98	133	98	219	10	2		231		10	231		
Cyanosis,	156	91	65	91	65	153	1	2		156		7	156		
Spina bifida,	10	4	6	4	6	10				10			10		
Teething,	25	18	7	18	7	17	8			25		1	25		
Other malformations,	21	8	13	8	13	20	1			21		1	21		
Trismus and tetanus,	19	12	7	12	7	19				19		1	19		
2.—Developmental diseases of adults,	14		14						14			1	9	5	
Child-birth,	14		14						14			1	9	5	
3.—Developmental diseases of old people,	795	278	517						795			37	352	416	27
Old age,	795	278	517						795			37	352	416	27
4.—Diseases of nutrition,	1,339	700	639	579	477	903	90	39	283	1,056		88	1 176	152	11
Atrophy and debility,	483	235	248	123	91	191	5	2	269	214		26	334	139	10
Marasmus,	856	465	391	456	386	712	85	37	14	842		62	842	13	1
CLASS V.—Violent deaths,	793	586	207	119	55	19	26	26	590	203		12	414	323	46
Order 1.—Accident or negligence,	13	7	6	3	4				6	7		1	11	2	
Fractures and contusions,	5	3	2		1				4	1			2	3	
Wounds, etc.,	6	6			3				3	3			3	1	2
Burns and scalds,	68	29	39	23	15	2	5	16	30	38		4	50	17	1
Poison,	16	12	4	1	2		2		13	3			7	9	
Drowning,	93	88	5	25	3	1	2	2	65	28		3	42	30	21
Suffocation, etc.,	30	17	13	4	8	10	1	1	18	12			18	7	5
2.—Homicide,	20	16	4	2	1	1		1	17	3			8	11	1
3.—Suicide,	80	53	37	1	2		2		85	5			53	37	
Wounds,	1	1							1				1		
Poison,	16	12	4	1	2		2		13	3			7	9	
Drowning,	4	2	2						2	2			4		
Hanging,	1	1							1				1		
Otherwise,	68	37	31						68				40	28	
4.—Violent deaths, (not classed, causes not specified or ill-defined,)	362	302	60	60	18	5	12	6	264	98		5	177	169	16

DEPARTMENT OF HEALTH.

MUNICIPAL HALL, PITTSBURGH.

PUBLIC HEALTH REPORT FOR YEAR 1884.

The total number of deaths, was 3,753; equal to a death rate of 20 per 1,000, (population estimated 185,000.) There were 1,038 deaths of infants under one year, and 781 of children between the ages of one and five years, making 48.5 per cent. of the total mortality.

Of the decedents, 1,061 were of foreign, and 2,692 of native birth. Of the latter number, 170 were colored.

Infectious diseases caused 695 deaths; equal to 18.5 per cent. of the total mortality, and 3.8 per 1,000 inhabitants.

Of those required by law to be reported, the statement is as follows:

DISEASES.	Cases.	Deaths.	Per cent.
Diphtheria,	1,119	321	26.8
Smallpox,*	48	12	25.0
Scarlet fever,	763	71	9.3
Typhoid fever,	525	130	24.8
Cerebro-spinal fever,	41	10	24.4

*The post-vaccinal cases, or varioloid, are included in this statement.

Measles prevailed most extensively during the spring and summer quarters of the year. It caused a total mortality of 69, against 42 for the previous year. Of this number, 29 were upon the South Side, 22 in the Old City, and 18 in the East End. All of the decedents but two were under ten years of age.

Whooping cough also prevailed most extensively during the spring and summer quarters. The mortality from this cause amounted to but 35 as against 80 for the previous year, and was distributed as follows: East End, 14; Old City, 11; South Side, 10. The decedents were all under five years of age.

Diphtheria.—During the year, there were reported 1,199 cases of this disease. Of which number 321 died, a mortality percentage of 26.8, a rate considerably lower than that of the previous year, when the cases numbered 588, and the deaths 170, percentage 28.9. Following the custom of former years, it prevailed most extensively in that portion of the South Side, viz: the Twenty-fifth, Twenty-sixth, Twenty-seventh, Twenty-eighth, and Twenty-ninth wards, much of the territory of which is level, composed of "made ground," and sadly deficient in drainage and sewerage. The South Side was credited with 814 cases and 203 deaths; the East End with 255 cases and 55 deaths; and the Old City with 100 cases and 62 deaths. Of the deaths from this cause, 42 occurred during the first or winter quar-

ter; 63 during the second or spring quarter; 80 during the third or summer quarter; and 135 during the fourth or autumnal quarter. Of the decedents from this cause, 22 were under one year of age; 202 between the ages of one and five years; 82 from five to ten; and 15 were over ten years of age.

Smallpox.—There were 48 cases and 12 deaths reported from this disease during the first seven months of the year, the last case being reported in July. Ten of the deaths occurred in the Municipal Hospital, the remaining two in the Eighteenth ward.

Scarlet fever of a mild type prevailed throughout the entire year. There were 793 cases reported, of which number 73 died, a mortality percentage of 9.3. There were 409 cases reported from the East End, of which number 33 died; 214 from the Old City, of whom 20 died; and 140 from the South Side, of whom 18 died. Of the decedents, 4 were under one year of age; 52 from one to five years, and 15 were over five years of age.

Typhoid fever.—There were 525 cases of this disease reported, of which number 130 died; a mortality percentage of 24.8. This is an unusually high death rate from this disease, and explainable upon the supposition that all the cases were not reported. The death rate from this disease for the previous year was 13 per cent.; 1,442 cases having been reported, with 188 deaths. It prevails most extensively upon the South Side, 215 cases with 53 deaths having been reported from this district; 112 cases and 37 deaths were from the East End; and 85 cases and 19 deaths from the Old City. The remaining 113 cases and 21 deaths were reported from the various hospitals. It caused 28 deaths during the first quarter; 17 during the second; 37 during the third; and 48 during the fourth quarter. Of the decedents from this cause, 20 were under ten years of age; 36 from ten to twenty; 46 from twenty to thirty; 16 from thirty to forty; 8 from forty to fifty; and 4 were over fifty years of age.

The mortality from infectious diseases was located as follows:

DISTRICT.	Population.	Deaths.	Death rate per 1,000.
Old City,	68,000	148	2.18
East End,	63,000	173	2.75
South Side,	54,000	340	6.30

The remaining 34 deaths occurred in the hospitals. The above figures show that the highest death rate from infectious diseases occurred, as in former years, upon the South Side, the deaths in this district outnumbering those of the Old City and East End combined.

The per cent. of mortality from infectious diseases on the total mortality of the district was as follows:

DISTRICT.	Total mortality.	Mortality from infectious diseases.	Per cent.
Old City	1,166	148	12.69
East End	1,042	173	16.60
South Side	1,272	340	26.73

The above figures show that in the Old City, which contains about 33,000 inhabitants to the square mile, one eighth of all the deaths were due to infectious diseases; that in the East End, which contains about 3,000 inhabitants to the square mile, one sixth of all the deaths were due to infectious diseases; and that on the South Side, which contains 10,000 inhabitants to the square mile, more than one fourth of all the deaths were due to infectious diseases.

In addition to the above, the principal causes of death were:

Consumption, which caused 355 deaths against 353 for the previous year.

Pneumonia, which was credited with 357 deaths against 261 for the previous year.

Bronchitis, acute and chronic, and bronchial catarrh, which caused 120 deaths against 68 for the previous year.

Diarrhœal diseases, including simple diarrhœa, 201; choleric diarrhœa, 87; dysentary, 17; and cholera morbus, 10; a total of 315 deaths against 254 for the previous year.

Violence, including railroad injuries, 64; chronic alcoholism, or intemperance, 40; falls, 30; drowning, 19; burns and scalds, 15; and various other forms of violence, 120; a total of 288 deaths against 321 for the previous year.

The following statement exhibits the death rate per 1,000 inhabitants in each of the three divisions of the city:

DISTRICT.	Population.	Total mortality.	Death rate per 1,000.
Old City	68,000	1,166	17.12
East End	63,000	1,042	16.54
South Side	54,000	1,272	23.55

The statement on the following page exhibits the age, sex, and total number of decedents from the different classes:

CLASSIFIED STATEMENT OF DEATHS FROM ALL CAUSES.

Causes of Death.	Sex.			Age.										
	Total.	Male.	Female.	Under 1 year.	1 to 5.	5 to 10.	10 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.
Infectious,	695	347	348	71	341	113	61	58	25	13	7	4	2	. . .
Constitutional,	692	361	331	186	55	7	43	119	91	89	50	43	9	. . .
Nervous,	386	235	151	185	77	11	6	12	12	25	21	21	12	4
Circulatory,	124	66	58	31	. . .	4	8	10	17	17	16	17	4	.
Respiratory,	569	322	247	196	138	22	13	23	23	31	49	50	20	4
Digestive,	591	326	265	183	143	8	18	23	34	20	25	28	8	1
Urinary,	99	60	39	1	5	. . .	3	7	12	16	20	29	6	. . .
Generative,	55	. . .	55	. . .	. .	. . .	3	22	22	4	2	1	1	. . .
Unclassified,	248	125	123	69	1	. . .	. . .	. .	1	. . .	. . .	1	100	76
Violence,	288	237	51	13	21	17	28	65	46	39	33	19	5	2
Unknown,	6	6	. . . . .	3	. . .	. . .	. . .	2	. . .	1	. .	. . .	. . .	. . .
Total,	3,753	2,085	1,668	1,038	781	182	183	341	283	255	223	213	167	87

The social relations of the decedents were as follows:

Married,	897	Not stated,	53
Single,	2,517		
Widows,	186	Total,	3,753
Widowers,	100		

The following statement exhibits the nativity of the decedents:

Pittsburgh,	2,118	Switzerland,	8
Other parts of the United States,	554	Austria,	5
Canada,	9	Poland,	12
England,	104	Sweden,	2
Ireland,	421	Russia,	3
Scotland,	14	Australia,	2
Wales,	33	Not stated,	26
France,	8		
Italy,	13	Total,	3,753
Germany,	417		

The location of the decedents was as follows:

City wards,	3,480	Episcopal Church Home,	1
West Penn Hospital,	125	Children's Home,	1
St. Franciscus Hospital,	47	County jail,	4
Mercy Hospital,	39	Central Station,	1
Municipal Hospital,	10	Found in rivers,	13
Pittsburgh Infirmary,	17		
St. Paul's Orphan Asylum,	4	Total,	3,753

MARRIAGES.*

There were reported to this office during the year 2,182 marriages, equal to 11.8 per 1,000 inhabitants, and 42 less than for the previous year.

BIRTHS.*

There were reported at this office during the year 5,367 births, equal to 29 per 1,000 inhabitants, and 166 less than for the previous year.

The following statement exhibits the number by months of births, marriages, still-births, and deaths, occurring in the city of Pittsburgh during the year 1884:

MONTHS.	Births.	Marriages.	Still-births.	Deaths.
January,	492	182	27	258
February,	456	190	33	259
March,	501	157	23	316
April,	407	199	47	307
May,	469	210	38	316
June,	436	197	31	321
July,	445	149	29	385
August,	476	185	24	374
September,	438	208	29	323
October,	418	184	23	285
November,	395	169	30	300
December,	434	143	35	309
Total,	5,367	2,182	369	3,753

* Incomplete.

The births and marriages show a slight decrease as compared with the previous year. The death show a marked increase.

Respectfully,

W. SNIVELY, M. D.,
Registrar Vital Statistics.
Per H. J. BRUSH.

PITTSBURGH, *February* 11, 1885.

REPORT OF THE HEALTH OFFICER OF ERIE.

ERIE, PA., *November 25, 1885.*

To Dr. BENJAMIN LEE,

Secretary of State Board of Health and Vital Statistics of Penn'a.:

DEAR SIR: In compliance with section seven of the act of Assemby, approved June 3, 1885, establishing a State Board of Health and Vital Statistics, I hereby send a death report from the city of Erie, taken from the city record. Since 1876 every case of death in this city has been carefully recorded by the undersigned, and the name, age and cause of death published in our local papers. The whole list has been annually published in our city directory, and errors corrected as quick as detected by the public. This mode of registration is, in our opinion, the surest way to get a correct record. At the time of the census in 1880, Erie had a population of 27,730. The city directory for 1885, gives us a population of 36,008, with 11,655 names of adults in the book. Estimating each name to stand for three persons, or three and a half, as in Buffalo or Cleveland, this will give us 36,000 inhabitants.

ANNUAL DEATHS.

Total of deaths in the year 1876,	350
Total of deaths in the year 1877,	347
Total of deaths in the year 1878,	375
Total of deaths in the year 1879,	405
Total of deaths in the year 1880,	490
Total of deaths in the year 1881,	549
Total of deaths in the year 1882,	499
Total of deaths in the year 1883,	440
Total of deaths in the year 1884,	496
Total of deaths in the year 1885,	477

The total of deaths, from the first of November, 1884, to the last of October, 1885, is 477, viz:

November, 1884,	51
December, 1884,	31
January, 1885,	28
February, 1885,	21
March, 1885,	53
April, 1885,	53
May, 1885,	48
June, 1885,	21
July, 1885,	43
August, 1885,	66
September, 1885,	30
October, 1885,	32
Total,	477

Sex: Males, 252; females, 225.
Under five years of age, 198.

NATIVITY.

Natives of Erie,	267
Natives of other parts of the United States,	69
Natives of England,	11
Natives of Ireland,	30
Natives of Scotland,	1
Natives of Canada,	6
Natives of Germany,	92
Natives of Italy,	1
Total,	477

DEATHS IN THE DIFFERENT WARDS OF THE CITY.

First ward,	88
Second ward,	104
Third ward,	78
Fourth ward,	75
Fifth ward,	40
Sixth ward,	92
Total,	477

In the First and Sixth wards our two hospitals are located, and many patients are brought there very often in a dying condition after railroad accidents, etc., and naturally increase the death rate of the respective wards. The Sixth ward is one of the heathiest places in the city, notwithstanding the large number of deaths.

Ages of the Decedents.

Under one year old,	142
From 1 to 2 years old,	20
From 2 to 5 years old,	24
From 5 to 10 years old,	15
From 10 to 20 years old,	18
From 20 to 30 years old,	49
From 30 to 40 years old,	28
From 40 to 50 years old,	36
From 50 to 60 years old,	35
From 60 to 70 years old,	39
From 70 to 80 years old,	40
From 80 to 90 years old,	16
From 90 to 100 years old,	5
Total,	477

Causes of Death.

Croup,	12
Diphtheria,	3
Whooping-cough,	11
Typhoid fever,	11
Intermittent fever,	3
Malarial fever,	6
Scarlet fever,	6
Diarrhœal diseases,	42
Aphthæ,	3
Pyæmia,	2
Tuberculosis pulmonary, (consumption,)	75
Anæmia,	9
Cancer,	6
Gangrene,	2
Diabetes,	1
Pneumonia,	45
Peritonitis,	3
Heart diseases,	20
Bright's disease and dropsy,	30
Convulsions,	52
Meningitis, spinal,	13
Enteritis,	11
Paralysis,	36
Apoplexy,	6
Diseases of the liver,	4
Abscess,	4

Gastritis,	5
Uræmia,	4
Hemmorrhage,	1
Aneurism,	1
Hernia,	1
Inanition and general debility,	19
Dentition,	5
Lock-jaw,	1
Puerperal fever,	10
Accident,	13
Murder,	1
Suicide,	1
Total,	477

During the year, thirty-six still-births were reported. Next year a complete registry of births will be kept. People, for some reason, don't like to report every increase of a family, or have it published. In order to get a complete report, the city of Erie *charges nothing for burial permits*, and for many a poor family this is quite a relief. *Why should a poor woman be taxed for the loss of her husband?* One fifth of our deaths are caused by zymotic (preventable) diseases, and the mortality is only *13.2 per thousand*, taking the population at 36,000. The city is beautifully situated on the great lake, with a good natural drainage and plenty of fresh water, and surrounded by good farms. There is a skeleton concealed in the city—the old mill-creek—which cuts the place in two, and acts as a sewer. Fortunately, after a lengthy litigation before the courts, the last mill-dam was removed, and the authorities ordered the necessary sanitary improvements, and the people will not rest until the old nuisance is covered up and removed from sight. Of course, for such works, besides the health committee, the finance committee has to be ready also.

Like everywhere, we have scattered all over town some old tumble-down dwellings occupied by poor people, without proper ventilation and drainage, with filthy cellars and yards and foul surface smells; but they disappeared one after another. Some pretty rough sanitary pioneer work was done in that direction, to the great anger of some stingy house-owners.

Our market is closely inspected, and many public and private nuisances are abated. Some three thousand people were vaccinated, free of expense, during the last month, and the work is still going on. If everything is not exactly right, there is a remarkable progress in sanitary matters.

Very respectfully yours,

ED. WILLIAM GERMER,
City Physician and Health Officer.

APPENDIX C.

REPORTS ON EPIDEMICS AND SPECIAL SOURCES OF DISEASE.

1. Report on the Sanitary Condition of the House and Neighborhood, in Philadelphia, whence probably originated the Plymouth Epidemic.
2. Report on the History of the Epidemic of Typhoid Fever at Plymouth, Luzerne county, in the spring and summer of 1885. Dr. Lewis H. Taylor.
3. Report on the Financial Cost of the Epidemic of Typhoid Fever at Plymouth. Dr. Morris Stroud French.
4. Report on Small-Pox at Spring Mills. Secretary.
5. Report on Typhoid Malarial Fever at Rosemont and Sanitary Condition Prevailing in that Village, with action of the Board to abate them. Secretary.
6. Report on Typhoid Fever at West Fernwood, Delaware county. Secretary.
7. Report on Texan Splenic Fever among Cattle in and near the City of Erie. Dr. J. Bryce, State Veterinarian.
8. Report on the Small-Pox at Sugar Notch. Dr. J. J. Smythe.
9. Report on the Typhoid Fever at Sugar Notch. Drs. Taylor and Davis.

To the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania:

Gentlemen: In August, 1885, I received from the Secretary of your Board a letter transmitting from Dr. Taylor, of Wilkes-Barre, the information that Mr. David Jones, the unfortunate and unconscious occasion of the Plymouth epidemic, had himself contracted the disease (typhoid fever) at the house, No. 800 East Girard avenue, Philadelphia. The Secretary's letter suggested that I should endeavor to learn whether this was the ultimate origin of the outbreak, or whether the chain of morbid processes could be followed back still further; and, also, that the precise cause of Mr. Jones' illness should be ascertained if possible. Acting upon these suggestions, I have made several visits to the house and neighborhood, and have carefully and thoroughly followed up every clue likely to shed light upon the subject. I have also made a careful personal inspection of the house and of the adjoining premises, and herewith present my report:

The house, No. 800 East Girard avenue, is at the corner of Otis street, in the Eighteenth ward. Girard avenue, at this point, runs from south-west to north-east, Otis street crossing it at right angles. The location of the house is properly described as on the east corner of the intersection. The premises are occupied by Mr. Thomas R. Jones as a cigar-store and dwelling, and appear to be well kept and cleanly, so far at least as the internal arrangements are concerned.

Inquiry revealed the information that late in September, 1883, Mr. Reuben Reed, who worked at his trade (blacksmith) at a shop on Richmond street, and boarded with Mr. Jones, was attacked with typhoid fever. Dr. A. H. Hulshizer, a well-known physician residing at 1419 Otis street, was called, and recommended his immediate removal to the Episcopal hospital. This was done, the record book showing the date to be September 28. He was discharged, convalescent, October 13.

"In May or June, 1884," says Mrs. Thomas R. Jones, "William P. Williams, aged twenty-three, a conductor on the Union Line of street cars, and a boarder in Jones' house, was attacked with typhoid fever; was ill at the hospital for six or eight weeks, and then returned safe and sound to his boarding-house." Dr. Hulshizer recommended him to the Episcopal hospital, but the hospital superintendent finds no record of the case upon the books of the institution.

Soon after Mr. Williams' return from the hospital, namely, July 16, 1884, Mr. Meshak Davis, aged twenty-one, a huckster, and a boarder at 800 East Girard avenue, was admitted to the Episcopal hospital with incipient typhoid fever. He also was discharged, recovered, August 19, 1884.

These three cases embraced a period of about eleven months. The long space of time covered by them made it seem extremely improbable that they had all originated from milk or other food contaminated by any single previous case of the disease, and I found no evidence to warrant such a theory. Neither did it appear likely that in the latter cases the infection had been transmitted from the earlier ones, since all of the first three patients were removed to the hospital at the outset of the disease. I therefore endeavored to learn whether any more constant cause existed to account for the succession of cases.

The lot upon which the house stands has dimensions of about thirty feet on Otis street by forty feet on Girard avenue. The main building is a three-story brick structure, of eighteen feet front on Otis street, and extending the entire depth of the lot on the Girard avenue side, leaving a side yard twelve feet wide by forty feet long. Directly across this space a one-story frame kitchen has been erected, leaving in front of it a yard twelve by sixteen feet opening upon Otis street, and back of it another space twelve by fifteen. This rear space, however, has been further encroached upon by the erection of a two-story frame structure, which leaves only a narrow space fifteen feet long by three feet wide. At the rear end of this "yard," stands a yard-privy three feet square, which still farther reduces the open space to three by twelve feet. The lower story of the frame building communicated with the kitchen and is used as a dining-room, its windows open into the narrow yard close to the privy-vault. The opposite side of the yard is closed in by the two-story wall of the adjoining house, while its rear end is also guarded by a wall of similar height belonging to the house, No. 802 Girard avenue. The privy itself is built of boards, is surmounted by a "ventilator," (which, on examination, was found to be a

sham,) and is poised over a shallow vault which also serves for the use of the house adjoining. The following plan of the premises will explain the whole situation.

We thus see that the cess-pool is located in, and occupies one fifth of a space fifteen by three feet in dimensions; that this space is inclosed on both sides and one end by two-story buildings, and at the remaining end by a one-story building, and is thus effectually protected from lateral air-currents. The foul emanations fill up the entire space, and too often find an escape into the kitchen and dining-room, with which it directly communicates. If the whole yard were one large cess-pool, with dining-room, windows, and kitchen door opening into it, it might be somewhat more offensive, but could scarcely be more dangerous. The cess-pool was "cleansed," or emptied, in the summer of 1884. At the time of my inspection it was almost full again.

There is no sewer connection with the room (third-story front) in which the four victims slept. The only connection between the house and the sewer is through a pipe leading from the kitchen sink, through the cellar, to a sewer on Otis street. This sewer comes up Otis street to a point somewhat below the house in question. The cellar of the Jones house, and those of the three houses eastward on Otis street, are affected with offensive odors at times, and the tenants frequently complain about them. The entire neighborhood is riddled with cess-pools, the majority of which are in an unsanitary state most of the time. The houses on Ash street, a street running parallel to Otis and a few rods north-east of it, are in even a worse condition than those on Otis street, and evidently from the same cause, namely, defective drainage due to a badly-arranged sewer.

I learned that in the house on the opposite side of Otis street, there have been three cases of typhoid fever within a few years, all of the patients being new-comers in the neighborhood. I was unable to learn what the sanitary condition of these premises had been in the past; but at present I can find nothing to criticise untavorably. There appears to be no unusual ill-health prevalent in the vicinity.

From all the information I could gather by means of personal inspection and diligent inquiry of neighboring physicians and other observant citizens, I have not the slightest doubt that while there are numerous and glaring unsanitary conditions in the vicinity, the real cause of the cases of typhoid fever occurring in Thomas R. Jones's house is to be found in the grossly defective cess-pool with its foul exhalations completely shut in from lateral air-currents and pouring through open doors and windows into the kitchen and dining-room, to be inspired by the inmates, or worse still, to be absorbed by the food in course of preparation for the table, and thus brought into contact with the alimentary mucous membrane.

It is proper to state in conclusion that the dangerous character of this particular cess-pool cannot be abated or removed by any amount of "cleansing" or emptying, however frequently performed. Its complete abolition alone can bring safety to the household.

REPORT UPON THE EPIDEMIC OF TYPHOID FEVER AT PLYMOUTH, PENNSYLVANIA.

By LEWIS H. TAYLOR, M. D., *Wilkes-Barre, Pennsylvania.*

Gentlemen of the Pennsylvania State Board of Health:

In response to your communication of July 4, 1885, requesting me to prepare for your use a history, &c., of the epidemic of typhoid fever in the town of Plymouth, I have the honor herewith to submit the following report:

Early in April of 1885, attention was called to an unusual and alarming amount of sickness in the borough of Plymouth, in Luzerne county, Pennsylvania, which proved to be an epidemic of typhoid fever, and which, during the spring and summer months, caused the illness of more than eleven hundred people, and the death of at least one hundred and fourteen.

To understand fully the nature and extent of this most remarkable outbreak, together with its cause and subsequent management, it may be well to preface our report with a brief sketch of the locality in which it occurred. The borough of Plymouth, a mining town of some eight or nine thousand inhabitants, is situated in the Wyoming coal region of Pennsylvania, in Luzerne county, upon the right bank of the Susquehanna river, three miles below the city of Wilkes Barre.

Owing to the development of coal lands, it has grown within a few years from an insignificant village to its present proportions, but its progress in sanitary science and improvement has not kept pace with its material development. A large portion of the town is built along the Main street, which extends for more than a mile nearly parallel with and close to the Susquehanna river. As the town has grown it has gradually extended backward toward the hills beyond, which, in the main part of the town, even a short distance from Main street, rise somewhat abruptly toward the north, so that Back street, although not far removed from the river, is nevertheless situated a number of feet higher. As a large part of the town is thus upon a side hill, there is but little difficulty in disposing of surface water, which readily finds its way into the Susquehanna.

No system of sewers and no effort at systematic drainage have ever been introduced, and the borough council seem singularly apathetic in the matter of sanitary reform. The drainage from each house is into cess-pools situated in the back yard, or, in some cases, it is even into the streets themselves, which, in parts of the town, have not a proper arrangement of gutters for disposal of this drainage.

The health of the town, however, in past years, has not been greatly different from that of other neighboring towns of the Wyoming valley, similarly situated and inhabited by a similar class of people.

PLAN
OF
PLYMOUTH, PENNA.
WITH THE SOURCES OF ITS WATER SUPPLY.

From the Official Surveys.

xxxxxxxx RESERVOIR WATER.
——·——·—RIVER WATER (AT TIMES).
·····RIVER WATER (ALWAYS).
-----BROOK WATER.

SCALE 1150 Ft. TO ONE INCH.

A_ Pumping Station, Plymouth Water Co.
B_ ,, ,, Del. & Hud. Coal Co.

It is true that malarial diseases have been prevalent at different times, and each year has furnished quite a number of cases of typhoid fever, but at no time in previous years has the latter disease been so prevalent as to be regarded with alarm, either by the physicians themselves or by the people at large.

When, therefore, the epidemic in question appeared, and the inhabitants were stricken down by the hundreds in a very few days, great consternation followed among the people, and the inquiries were naturally made on all sides:

1. *What is this terrible sickness that is upon us?*
2. *What is the cause of so unusual an outbreak?*

It appeared suddenly, following upon a few days of warm weather, which had caused the breaking up of the ice upon the river and the melting of large quantities of snow upon the hillsides. Its ravages were not confined to any section of the town nor to any class of people; but the rich and the poor, the clean and the unclean, were alike attacked. From careful inquiry made early in May, I ascertained from the physicians of Plymouth that the first case belonging to this epidemic occurred on April 9, and that from this time on the disease spread rapidly. During the week beginning April 12, from fifty to one hundred new cases appeared daily, and on one day it is said two hundred new cases were reported.

In the early history of the epidemic, so severe were the symptoms and so alarmingly rapid was the spread of the disease, that some doubt as to diagnosis prevailed for a short time, even among some of the medical gentlemen in attendance.

It was variously declared to be typhoid fever, malarial fever, typho-malarial fever, and typho-malarial-meningitis; but in a very short time its nature was made manifest and the doubt no longer existed that a true epidemic of typhoid fever was hanging over the doomed borough of Plymouth. The first post-mortem examination was secured only after urgent solicitation, the people being singularly averse to any such examinations, notwithstanding many had already died. This autopsy was conducted by Dr. E. O. Shakespeare, of Philadelphia, on May 10, in the presence of several physicians from Wilkes-Barre and Plymouth. Two other examinations were made on the following day by Drs. Shakespeare and French, and in every case the characteristic lesions of Peyer's glands were found.* If doubt as to diagnosis lingered in the minds of any, it was finally dissipated when these autopsies showed the disease to be genuine typhoid fever, and thus answered the first question.

In answer to the second question—*What is the cause of this outbreak?*, various theories were put forth, some declaring it to be due to the filth of the town; some that it was due to drinking polluted well water; others polluted river water; others, polluted mountain water; and still others that it was due to a peculiar condition of nature by no means explainable.

* A report of these autopsies will be given elsewhere by Dr. Shakespeare.

Among the various theories advanced, one of the first was, that it was due to the accumulated filth of the town, which being acted upon by the warm rays of the April sun, had suddenly become noxious, and the emanations therefrom had caused the disease. This especially suited the "typho-malarial" theorists. But, although Plymouth is not an especially clean town, it is not, on the other hand, more filthy than other neighboring towns where the disease does not prevail, nor was it at this particular time in worse condition than in preceding years.

Again, as the true nature of the epidemic became known, the filth theory fell to the ground, because, although an unclean town is not usually regarded as a healthy town, it is admitted by common consent that filth *per se* does not cause typhoid fever. The emanations therefrom may so prepare the system, or, figuratively speaking, so till the ground, that when the proper seed is sown an abundant harvest may be the result. Whether typhoid fever may be communicated directly through the air or not is still a mooted question, but it is generally admitted that in the large majority of cases, at least, the poison is conveyed to the system by means of polluted food and drink taken directly into the stomach.

In this epidemic, all classes of people were attacked, the clean as well as the filthy, and all parts of the town affected, the highlands as well as the valley; and inasmuch as this was the case, thoughtful minds naturally turned to the water-supply as furnishing the true cause of the invasion.

Previous to January, 1876, the inhabitants of the town depended for their water-supply wholly upon wells and springs, and many of these are still in use; decidedly to a greater extent since the epidemic than before.

The Plymouth Water Company was organized in June, 1875, and began supplying the town in January, 1876, with water of remarkable purity from a neighboring mountain stream which has its source in a beautiful sand spring some miles away. The reservoirs are formed of huge dams of masonry built across the stream, from the lower or first of which pipes lead to supply the town. The first, capacity three hundred thousand gallons, and the second, capacity one million seven hundred thousand gallons, were built in 1875. These soon proved insufficient, so the third, capacity three million gallons, was built in 1876, and the fourth, capacity five million gallons, in 1879, giving a total storage capacity of ten million gallons.

This, with the constant flow of the stream, has been sufficient during the greater portion of each year to supply the town with water, and also to furnish two hundred thousand gallons daily to the neighboring coal breakers. But during the dry season of the year, the mountain stream sometimes becomes very low and water is then pumped directly from the Susquehanna river. A small portion of the town is supplied with river water pumped by the Delaware and Hudson Coal Company. All of these sources of water-supply must be borne in mind in considering the answer to our second question.

Knowing the history of many epidemics and remembering the facility

with which wells become contaminated from carelessly located privies, the thought of well water contamination naturally presented itself to many. That this was not the cause of this epidemic was clearly shown by some very interesting facts.

Near the extreme southern end of Plymouth, upon the banks of Coal Street creek, a house was found in which hydrant water is used, and in this house two persons were sick with the disease, while in another, but sixty feet distant, all the inmates were free from the disease. A little farther to the north of these two houses there were found on Temperance hill eleven families using well water, and no case of typhoid fever has yet appeared in any of these families.

On the upper side of Lee street, almost every family using hydrant water was affected, while those living on the lower side of the same street are all supplied with well water, and none of them were sick. Upon Welsh Hill, a community of several hundred persons was found supplied exclusively with well water. There were, during the whole time of the epidemic, but twenty persons taken sick on this hill, and all these were either persons who had been working in Plymouth in the daytime, or else schoolchildren and others who were accustomed a part of the time to drink water from the hydrants.

The same relative condition exists on Davenport, Ackley, and other streets throughout the town, the investigation of numerous cases showing that persons who used well water in general and suffered from the disease were those who had been in the habit of drinking hydrant water while away from their homes, while those who used well water exclusively were not attacked. It was thus unanimously conceded by all investigators that, in the early part of the epidemic at least, the use of well water had nothing whatever to do in causation of the disease.

Inasmuch as the disease was found wherever hydrant water was used and only there, none could resist the conclusion that its cause must be traced to the use of this water. But the hydrants receive their supply from two sources. During the greater part of the year, as previously mentioned, it is from a mountain stream of great purity. Occasionally, however, when this stream is quite low, the pipes are supplied with water pumped directly into the mains from the Susquehanna river. This was the case from March 20, at noon, to March 26, in the evening of the present year.

Here, then, are, apparently, two possible sources of contagion, and it is evident that the cause of the epidemic must be traced either to the water pumped from the Susquehanna or to that supplied by the mountain stream, and this leads us to consider two questions:

1. *Why not the river water?*
2. *Why the mountain stream?*

Water from the river was first pumped by the Plymouth Water Company in 1878, and occasionally in succeeding years, *e. g.*, in 1881, ninety-

one days; in 1882, from October 27 to January 1, sixty-five days; also, from September 30, 1883, to February 1, 1884, one hundred and twenty-four days, and, again, last autumn, from July 30 to November 24, a period of one hundred and eighteen days. This river water, although objectionable—owing to the nearness above of Wilkes-Barre, a city of thirty thousand inhabitants—has never been followed by any epidemic of typhoid fever.

In considering the influence of the river water used in the present year, we must bear in mind the exact time of the pumping—March 20 to March 26—and the relation of this time to the outbreak of the epidemic. From replies to a circular sent to the physicians of Plymouth, I ascertained, as already stated, that the outbreak occurred about April 10 to 12, there being one case reported as early as April 9. A large increase occurred after April 15. The gentleman who saw his first case April 9, saw but thirteen more in the next five days; while another who saw his first case April 14, saw seventy-five new cases in the five succeeding days.

The length of the period of incubation varies, but it is usually stated as from ten to fourteen days. Dr. Stillé states fourteen days. Leibermeister says three weeks, *i. e.*, counting to the time the patient is thoroughly ill with the fever, though, he says, in many cases the period seems to be but seven days.

Wilson, in his treatise on "Continued Fevers," gives the average period as fourteen days, though he cites numerous cases to show that exceptionally it may be as short as five, three, and even two days, while very exceptionally it may be as long as four weeks. He mentions one particularly interesting epidemic, in which a number of persons, on a certain day, visited a neighboring town, and, while there, drank from a well polluted with excreta from a typhoid fever patient. Of these, fourteen were attacked who drank from the well at the same time, and their cases showed a range in the period of incubation of from eight to eighteen days. But suppose we admit from two to three weeks as a proper average period of incubation instead of from ten to fourteen days, as is claimed by many, we should, nevertheless, judging from the history of all previous epidemics, expect *some* cases to arise in ten days from the time of infection.

If, then, it be from drinking Susquehanna water, we should naturally see some cases of fever as early as March 30, or ten days from the time the pumping of river water began; but no such cases appear, nor do they appear within ten days after the pumping ceased, *i. e.*, within ten days of March 26. Inasmuch as no outbreak occurred previous to April 10, we would infer that the poison was not taken previous to the last days of March or the first day of April; in other words, not until several days after the use of river water ceased.

Whether decomposing sewage in drinking water will produce typhoid fever without the dejecta of a typhoid patient being present, is still an open question.

Dr. Downs, reported in the *Lancet* and quoted by Parkes, records six cases of typhoid fever as the result of the overflow of non-typhoid sewage into a well. On the other hand, cases recorded by Allbut and Wohlrab show that contaminated water may be used for a long time without causing typhoid fever; then persons affected with the disease enter the place and their dejecta pass into the water, causing an outbreak of typhoid fever.

An extremely strong case is quoted by Ballard: "Very polluted water had been used for years by the inhabitants of Muncy, without causing fever, when a person with typhoid came from a distance to the village, and the excreta from this person were washed into the stream supplying the village.

"Between June and October, 1872, no less than seventy-six cases occurred out of a population of eight hundred and thirty-two persons. All of those attacked drank of the stream water habitually or occasionally. All who used rain or well water escaped, except one family, who used the water of a well only four or five yards from the brook. The case seems quite clear: First, that the water caused the disease; and secondly, that though the water polluted with excreta had been used for years, no enteric fever appeared until an imported case introduced the virus."

He further says: "Positive evidence of this kind seems conclusive, and we may now safely assume that the presence of typhoid evacuations in the water is necessary; common fæcal matter may produce diarrhœa which may be febrile, but for the production of enteric fever the specific agent must be present." If this argument be true, then river water polluted with the sewage from a large city, free from typhoid fever, is less dangerous than a smaller amount of water containing the specific poison.

The sewers of Troy all empty into the Hudson, and Albany, which is six miles lower down, derives its water from the river after this sewage has been poured into it. The borough of Nanticoke, situated a few miles below Plymouth, receives all of its hydrant water from the Susquehanna, but at no time has it suffered from a serious outbreak of typhoid, notwithstanding the water there used has opportunity to be contaminated by the sewage from populous towns and cities above. In fact, it is proven that Nanticoke had fewer cases of typhoid fever during last March and April than in any month of the past year. It is well known, however, that typhoid fever is frequently found in Wilkes-Barre, three miles above Plymouth, and might not the Susquehanna become polluted with the specific poison at this place? A careful report from thirty-one physicians in Wilkes-Barre shows that they had under their care, between January 1 and April 1, of the present year, twenty-six typhoid fever cases.

Of all this number, only two were in houses connected with sewers, and thus in all this time there were the excreta of only two typhoid patients poured into the Susquehanna at Wilkes-Barre, and in both of these cases disinfectants were used to neutralize the poison. Although Wilkes-Barre has a new system of sewers, which is gradually extending so as to embrace

the whole city, there were but six hundred connections made with the sewers, old and new, up to June of the present year, the remaining sewage of the city going into private cess-pools. Of the houses connected, at least three hundred have been pouring their sewage into the river, through the old sewers, for the past ten years, and although river water has repeatedly been used at Plymouth, its use has not been followed by serious results.

The flow of the Susquehanna at Wilkes-Barre, at low water mark, as taken from the Government survey, is nine hundred and thirty cubic feet per second, showing that the dilution of sewage would be, at least, at the rate of six hundred and two millions six hundred and four thousand gallons per day, and the danger from this source, at a distance of three miles, would be almost infinitesimal.

It has been thought by some that there might be pollution of the river nearer to Plymouth than the cases mentioned above. It has been reported that, during the summer of 1884, typhoid fever broke out in White-Wash Hollow, a small valley which runs from No. 2 to No. 4 breaker and to the Boston slope. This valley is partially drained by the small stream which empties into the river below the Delaware and Hudson's pumping station, near the upper end of Richard's Island. (See map.)

It has also been claimed that people being very careless as to the disposal of excreta, much of it might find its way into this stream, be carried into the river, and thence find its way into the company's pipes during the few days of pumping in March.

Now, at first blush, this might seem a point for consideration, but that it could have had no effect whatever in causing this epidemic may be shown from the following statements:

First. This stream joins the Susquehanna at the upper end of Plymouth, and any one taking the trouble to examine it will find that it remains a distinct stream, flowing close to the right bank of the river for a long distance, and does not readily mingle with the general current. The Plymouth Water Company, however, took their supply two hundred and fifty feet from shore.

Second. This is a very small stream, and there is but very little sewage carried by it at any time, as but few houses are situated directly upon its banks.

Third. The mine pump of breaker No. 1, situated directly upon this stream, at a point very near where it empties into the river, is constantly pouring into the stream a large amount of extremely acid mine water, an average of 505,500 gallons daily, so that, if there were any typhoid fever germs in this stream, they would, in all probability, be thoroughly neutralized before entering the river.

Fourth. Whatever this stream might ordinarily contain, it did not, by any possible chance, empty any surface water into the Susquehanna in March previous to the 26th, much less previous to the 20th, for the temperature during the greater part of March was far below the freezing point,

thus preventing a thaw of any consequence. It is positively proven that the stream in question did not at this time carry any sewage into the Susquehanna.

As is well known March, was the coldest month of the past winter. On March 20 the maximum temperature was 20° Fahrenheit; March 21, 20.1°; March 22, 20.1°; March 23, 23.2°; March 24, 35.6°; March 25, 34.8°; March 26, 46.1°. So it will be seen that there was no day previous to March 26 that it would be possible for any considerable thaw to take place.*

If further confirmation of the opinion already expressed—that the river water had nothing whatever to do in causing this epidemic—be needed, it may be found in the statement of a few additional facts and in the history of some very interesting cases.

It must be borne in mind that the river water used between March 20 and March 26 was not pumped into the reservoir and thence distributed to the town, but was pumped directly into the pipes and chiefly devoted to supplying the mines and that part of the town bordering on the river, *i. e.*, Main street, and this part was thus supplied during the whole of the time of pumping, while the valves were all closed in the pipes leading from the Main street pipe to the upper or back part of the town, and this latter part was thus chiefly supplied with water from the reservoirs.

But should work at the mines be stopped during any of this time, it would be possible for some of the water pumped from the river to force its way into the bottom of the first reservoir, and thus be distributed throughout the town, and it is quite true that the back streets were thus supplied with some river water for two days of this time. It is a notable fact, however, that typhoid fever was not more prevalent, but really less so, in the part supplied with river water during the whole of this time than in the parts supplied chiefly with mountain water. But all river water in use, I am informed by the superintendent, would pass out of the pipes in six hours after the pumping ceased, and thus it could not have been used later than March 27. If, then, the pumping of river water ceased on the evening of March 26, persons moving to Plymouth after the following day could not possibly drink such water from the hydrants.

The following cases seem to bear directly upon this point:

First. Mrs. J. K. came to Plymouth from Afton, Wisconsin, and arrived March 30, four days after river water was in use. She was taken sick April 18, though she had been feeling badly for several days previously. She was, on May 21, convalescent from a severe attack of typhoid fever.

Second. Mr. M. F., patient of Dr. C. H. Wilson, had been working in Plymouth during the winter, but on April 1 moved his family from Ashley to Plymouth. Himself and two others of his family, who had not been in Plymouth previous to April 1, were ill with the fever in May.

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*For the above record of temperature, I am indebted to the Rev. Dr. Hodge, of Wilkes-Barre, who has charge of the Government meteorological observations at this place.

Third. Miss McG., patient of Dr. F. L. McKee, moved to Plymouth from Sugar Notch, April 1, and was taken sick with typhoid fever April 15, though she had been complaining two or three days previously.

Fourth. Miss H., patient of Dr. Guthrie, went to Plymouth from Wilkes-Barre, March 30, and remained thirteen days. She returned to Wilkes-Barre on April 12, feeling badly, and was seriously ill with the disease by April 15.

Fifth. Miss A. came from New Jersey to Wilkes-Barre in March. She visited Plymouth first on March 25, remaining only from 10, A. M., to 3, P. M. She went again on March 27, remained about ten days, was taken sick on April 18, and was seriously ill for many weeks.

Sixth. Mrs. C., patient of Dr. Guthrie, visited Plymouth first from March 21 to March 24. Again on March 31 and April 1. Again from April 17 to April 21. She was taken sick on April 22. If she became infected between March 21 and 24, the period would be one month, which all admit is highly improbable. If, however, she drank contaminated water on April 1, the period of incubation in her case would be twenty-one days, or the time claimed by Liebermeister as necessary.

Seventh. R. B., patient of Dr. Spencer, of Dallas, visited Plymouth early in April—about the 5th. He drank water at a barber-shop, and also at a livery-stable; was taken sick April 15, and by April 18 had well-developed typhoid fever.

Eighth. C. C., patient of Dr. Spencer, visited Plymouth about the last day of March, to attend a funeral. He drank considerable water at a hotel, as he was very thirsty. He was ill with typhoid fever, and called the doctor on April 22, though he had been ailing nearly a week.

Ninth. Mr. S. moved his family to Plymouth on March 30, though he had previously been working there. He was taken ill on April 14, and died on April 20. His wife was taken sick on April 18, and died on May 20. Frank S. visited this family about April 9, and later. He, too, was taken sick, and died early in May.

Tenth. Miss L. went to Plymouth with case two, to assist the family for a few days. She remained a week or ten days, returned to her home in Ashley, and was soon after seriously ill with typhoid fever.

Eleventh. Dr. W., resident physician at German hospital, in Philadelphia, visited Plymouth on April 1, and drank of the water until April 4, when he returned to Philadelphia. In a few days after his return, he began to feel languid, and this feeling progressed gradually. On April 16, he had a chill, and also on the two following days. April 18, he took to bed, and was seriously ill with typhoid fever for some weeks. The temperature on the tenth day was one hundred and five, and continued from one hundred and four to one hundred and five for several days.

These all drank water in Plymouth, but did not drink river water. No doubt, other similar cases exist, but they were not brought to the attention of the writer.

If the epidemic were due to drinking river water, it would be reasonable to suppose we would find persons ill who had visited Plymouth between March 20 and 26, but thus far no such cases have been found, and yet it is fairly presumable that some outsiders visited Plymouth between these dates.

At the extreme upper end of Plymouth, there is, at Ridge row, a community of twenty families living in ten double houses, and at Broadway, a little farther north, a community of forty families in twenty double houses. These sixty families received no water from the Plymouth company's hydrants, and no case of the fever has appeared among them.

During last fall and early winter, Ridge row was supplied with river water, pumped by the Delaware and Hudson Coal Company, directly from the Susquehanna. About January 1, the pipe leading to Ridge row was broken, and from that time on the twenty families depended upon wells and spring. Broadway is supplied with river water by the same company, and the forty families continued its use all through the winter, and even through the fatal month of March, without causing any sickness whatever

It is proper to state that there are two wells at Broadway, and, possibly, some of the families used well water, but the majority of them used river water exclusively, and continued to do so until April, and, as above stated, no case of the fever has appeared among them.

Near the Lance breaker, (No. 11,) is a reservoir which, when full, contains thirty or forty thousand gallons of water. This is filled, from time time, by the Plymouth Water Company, and is used to supply No. 11. It was filled with river water at the March pumping, and left full on March 26. Thirty-five persons living in the immediate vicinity receive their water-supply from this reservoir, and if the breaker be not running, it will last them two or three weeks. They used this river water from March 20 to 26, and continued to do so for two or three weeks longer, *i e.*, as long as the supply lasted. They still use water from this source, and from no other, and not one of these thirty-five has been ill with the fever.

Surely, enough evidence has been given to show that the river water, as a factor in causing the epidemic, must also be excluded. Had all the people of Plymouth used river water from March 26 to April 10, this history would never have been written.

We stated that the origin of the epidemic must be traced to the use of water either from the river or from the mountain stream. We have shown why not the river, and this leads us to consider:

2. Why the mountain stream?

There remains evidently but one possible cause for this most serious and deplorable outbreak, and that is contamination of the water supplying the company's reservoirs. A glance at the accompanying map will show the location of this stream and of the several reservoirs. Above the starting-point of the water-pipes there is but one house situated upon the banks of this stream, and one upon the banks of the fourth reservoir.

In the house between the third and fourth reservoirs, situated almost immediately upon the stream, there lives a man who but recently has recovered from the effects of a severe attack of typhoid fever. This patient went to Philadelphia, December 24, 1884, and while there thinks he contracted the disease. Whether he did thus contract the disease in Philadelphia, may, we think, admit of question. But it is, nevertheless, true that he returned to his home January 2, 1885, and for many weeks was seriously ill with genuine typhoid fever. Early in March, he was convalescent and was out of bed. A relapse occurred about the middle of March, and he was very sick on the 16th. On March 16 and 17, he had hemorrhages of the bowels of so severe a type that, on March 18, his life was despaired of, even by his physician.

He, however, rallied, was quite ill for some time, but was convalescent in April, so that his physician discontinued his visits after April 12.

During the course of his illness, his dejecta passed at night, without any attempt at disinfection, were thrown out upon the snow and frozen ground, toward and within a few feet of the edge of the high bank, which slopes precipitously down to the stream supplying the town with water.

The nurse in charge states explicitly that in emptying the chambers at night she did not stand on the porch to throw out the contents, but stepped down some distance and threw them toward the creek. If she stepped but a few feet away from the porch, she would empty the excreta within twenty-five or thirty feet of the edge of the stream.

The dejecta passed during the day were emptied into a privy a little further back, *the contents of which lie almost upon the surface of the ground*, and at the first thaw or rain they too would pass down the sloping bank and into the stream. These dejecta were thrown out from time to time until the accumulation no doubt equaled the daily passages from many such patients. They remained innoxious upon the snow and frozen ground until sometime between March 25 and April 1, when they were washed into the stream and thence into the third reservoir.

The house in question does not stand in a ravine nor in a protected spot, but in an open clearing, with land sloping toward the south, which clearing would naturally feel the effects of the sun's rays and part with its snow and accumulated filth sooner than the more protected regions which also drain into the stream, so without cavil the first water from the effects of the thaw to enter the third reservoir would be from the melted snow in the immediate vicinity of this house.

The maximum temperature, as shown on page —, was on March 26, 46.5°; March 27, 56°; March 28, 43°; March 29, 37°, increasing rapidly until April 4, when a temperature of 70° was reached.

March 26, with a maximum temperature of 46.5°, is the first day on which any considerable thaw could occur. Upon the evening of this day, the superintendent of the water company visited the reservoirs to ascertain whether it would be allowable to discontinue the pumping of river water.

He found the first and second reservoirs almost entirely empty, while the third was filling rapidly, the short pipe which allows the water to discharge from the bottom of the third into the stream leading to the second reservoir being tightly frozen.

He caused a fire to be built to melt the ice in this pipe, and then stopped the river pumps. The honest act of an honest man, but simply in the discharge of his duty and with kindliest intent. But of what a catastrophe was he the unconscious usher and hastener! The water, with its accumulated typhoid fever poison, was discharged from the bottom of the third reservoir, ran down to the second on to the first, and was thence distributed to the town, in all probability between the 28th of March and the 4th or 5th of April.

When might we then expect the first cases from this cause to appear? Regarding the period of incubation as fourteen days, we would look for the first cases from April 10 to April 15, with possibly a few exceptional cases somewhat earlier, while the majority would appear somewhat later, and this corresponds exactly with the time of the outbreak, no case of the fever having occurred previous to the 9th of April, excepting, of course, sporadic cases, and such as may have occurred during the winter and spring, and which were in no way connected with this epidemic.

We do not presume to say that all of this poison passed out of the third reservoir in five days. No doubt some of it lingered and was operative in diminished strength for some time later, and this but explains more fully the lateness with which some cases of the disease appeared. But that it was operative about the first day of April is, we think, clearly shown from the history of cases already given of persons who did not visit Plymouth previous to March 30.

That the excreta from one typhoid patient have frequently poisoned the water-supply of whole neighborhoods, and thus caused such outbreaks, is well known, and we need only refer, in corroboration of this, to the well-known epidemic in New Boston, in 1843, reported by Dr. Austin Flint, and to the outbreak at Munich in 1860 and again in 1862, at Caterham and Red Hill in 1878, and especially to the outbreak (previously mentioned in this paper) at Muncy in 1872.

In considering the possibility of one patient poisoning more than a thousand in Plymouth, we must bear in mind all the attending circumstances:

1. The accumulation of weeks, which equaled the dejecta from many ordinary patients, and which lay for a time dormant upon the snow and frozen ground.

2. The nearness to the stream. The house is so situated that all of the excreta were thrown within a few yards of its banks, and the conformation of the ground is such that its surface water could not possibly drain in any other direction.

3. The unusually warm weather, which caused a sudden thaw and poured the surface water into the empty reservoir.

4. The concentration of the poison in a small amount of water.

5. The short distance to the town; and finally the possible previous preparation of the soil for the reception of this seed, which sprang at once into vigorous growth and ripened for an abundant harvest of death.

It would seem that the mere statement of facts, as found in the few preceding pages, is amply sufficient to explain the cause of this remarkable epidemic, and we need have no hesitation in declaring the pollution of the mountain stream, which supplies the reservoirs of the water company of Plymouth, to be the sole cause of the remarkable outbreak of typhoid fever in that borough.

That the mountain stream might have been polluted with fæcal matter from a typhoid fever patient, was first suggested by Dr. R. Davis as a possibility in an article published in the Wilkes-Barre *Record* on April 29. The publishing of this article provoked considerable comment, and the water company of Plymouth requested a committee, consisting of Dr. J. A. Murphy, Dr. J. L. Miner, and myself to make a thorough investigation of its water-supply, and ascertain, if possible, the cause of the epidemic. This we did on May 6, examining carefully the whole length of the stream to some distance beyond the fourth reservoir, and we reached unhesitatingly the conclusions already expressed in this paper. The report of this investigation was presented to the Plymouth Water Company on May 7, was printed in the daily papers of Wilkes-Barre on the following day, and, in the form of more extended essays, in the Philadelphia *Medical News* of May 16 and June 20.

A few days after this first investigation, the same ground was gone over by Drs. Shakespeare and French, of Philadelphia, and in a preliminary report to the Philadelphia County Medical Society, on May 13, they confirmed *in toto* the report of the above-mentioned committee. Among other remarks they gave the following:

"During the period of pumping from the Susquehanna, the water in that river was lower than it had been at any time for years, and the surface was frozen tight. The city of Wilkes-Barre, containing thirty thousand inhabitants, delivers its sewage directly into the Susquehanna, the mouth of the lower sewer emptying only two miles above the Plymouth pumping station, while the current is very rapid between the two towns. The water is further contaminated by refuse water from five or six mines as well as by the garbage from the abattoirs at Wilkes-Barre. Notwithstanding this unusually filthy condition of the Susquehanna river, it is beyond question entirely innocent of causing the epidemic, for the following and other reasons:"

They then go on to state certain facts already presented in this paper and close as follows:

"No other conclusion can be arrived at than that this infective poison existed in the mountain water, and originated from the one case of fever in the house on the side of the stream."

This report of Drs. Shakespeare and French was afterwards published in pamphlet form with an appendix containing valuable sanitary rules for the people relative to stamping out the epidemic. A few days later a third thorough investigation was made by Drs. Taylor and Edson, of the New York Health Department, and Chemist Martin, of the Columbia School of Mines. Their report* has not yet been published, but they expressed themselves as decidedly of the opinion that the epidemic was entirely due to the polluted mountain water. They found one or two cases of the disease in families supplied with milk from neighboring families where the disease existed, but as these had also drunk the hydrant water, it was impossible to tell from which source the infection came.

A fourth investigation was made by a committee from the Buffalo Board of Health, Dr. A. H. Briggs being chairman. After a statement of the history of the epidemic, etc., they conclude as follows:

"From the above facts, we draw the conclusion that this epidemic owes its origin to the solitary case in the Davis family. The excrement thrown out on the slope undoubtedly contaminated the water of the entire brook. It is a notable fact that those using water from springs and from the Susquehanna river have been largely exempt from the scourge."

A fifth investigation was made by Dr. Herman Biggs and Prof. Breneman, of New York, and the results of their work were published at length in the New York *Medical Journal* of May 23 and June 6, 1885. After stating the facts already given, they say:

"The conclusion is scarcely avoidable that this epidemic was due to the contamination of the water in the reservoir by the stools of a single patient with typhoid fever, whose case occurred on the stream supplying the reservoir several miles distant from the town.

"The magnitude of the epidemic and the clearly defined relations existing between the first and the succeeding cases combine to make this one of the most instructive, as well as one of the most terrible, instances which ignorance and negligence have contributed to the records of disease."

Other investigations have been made and the same conclusions have invariably followed, except in one instance. Dr. Torrey, of Scranton, in the New York *Medical Record*, considers four factors to have been active in

* An abstract of the New York committee's report appeared in the New York *Tribune* on May 28th. They state the same facts as given in this paper, and reach the same conclusions. They also say: "The water company has four storage reservoirs in a ravine, extending to the top of the Shawnee mountain, overlooking the town. These reservoirs have a capacity of about 10,000,000 gallons. They are fed by mountain streams and an artesian well 1,950 feet in depth. In the extreme cold weather of last winter the people let the water run day and night to keep the pipes from freezing. All the water stored in the four reservoirs was exhausted on March 20th, the springs in the mountain having dried up. For a week, water was pumped from the river, but the people disliked to use it, believing that the river was contaminated with sewage from Wilkes-Barre, three miles above. Water from the mountain reservoirs was used again on March 27th. It is now believed that if the river water had been used a few weeks longer the great epidemic would not have occurred."

the production of the epidemic, viz: Polluted mountain water, polluted river water, polluted milk, and polluted air. This, so far as I know, is the only article published by any investigator expressing views different from those contained in this paper.

The epidemic, as stated, began early in April, and it continued with diminished virulence on through the spring and summer and even into the fall months.

This continuance was not due to the first cause, but in a great measure, no doubt, to secondary infection. Even after the nature of the sickness became known, and its cause fully explained, great carelessness still prevailed among the people in regard to disposing of excreta, and even physicians themselves did not exercise such care as the urgency of the case demanded. The Plymouth Water Company, upon being informed of the cause of the outbreak, immediately had all of their pipes thoroughly cleansed, notwithstanding it was generally conceded that the immediate cause was no longer operating. They also removed the offending out-house to a safe distance from the stream and subsequently cleansed the reservoirs. They have also, since the epidemic, laid eight thousand feet additional of pipe in order to supply the mines Nos. 11, 12, 15, 16, Parrish Coal Company, and Gaylord slope entirely with river water, thus husbanding the reservoir water for the use of the town. By this improvement a saving is made of two million gallons daily.

The people, however, in very many instances, still feared the hydrant water and resorted entirely to the use of well water. Many of these wells, being situate upon side hills, were in proper position to become infected from the carelessly disposed excreta, and this fact alone would account, in great measure, for the new cases that occurred in May, June, July, and August.

A careful canvass of the town was made, from time to time, by the several ward committees appointed by the general relief committee, of which Mr. William Davis was chairman. Mr. Davis has kindly furnished me the original lists handed in by the several ward committees, and from these I have been able to cull the statistics which follow.

There were in all eleven hundred and four patients ill with the fever in Plymouth who properly came under the head of this epidemic. There were other names reported, but some of them were down as having been attacked in March and two having begun in February.

Clearly, these should be ruled out of the reported number. It is true that the date of the attack in each case was not gathered by the committees until September, and some allowance should be made for forgetfulness on the part of patients; but as it was clearly shown from the testimony of all the physicians in attendance that the epidemic did not begin until April, the cases reported for March either really belong to April or do not belong to this epidemic at all.

Of these 1,104 cases, 713 were taken sick in April; 261 in May; 83 in June; 31 in July; 15 in August; 1 in September, thus showing at a glance

the great virulence of the poison contained in the water in the early days of April.

If to the above number we add those who were taken ill in Plymouth and went to Wilkes-Barre and other places to be cared for, and also the visitors who took the poison in Plymouth, and in whom the fever developed at their own homes, we shall find the actual number of persons affected considerably over eleven hundred.

There were 605 males and 499 females. Up to October 1, there were 114 deaths, or a mortality of nearly $10\frac{1}{3}$ per cent.

The average age of those who died was 24.05 years, and the average duration of illness, 3.33 weeks. Of the 990 who recovered the average duration of sickness was 8.28 weeks; but this, no doubt, is meant to include convalescence as well.

The records were obtained by non-medical canvassers, and the whole time of illness was included, *i. e.*, until patients were entirely able to resume work.

The following interesting table will show the distribution of cases as to age, from one year, the youngest, to eighty-one, the oldest:

Age.	Number sick.	Age.	Number sick.	Age.	Number sick.	Age.	Number sick.	Age.	Number sick.	Age.	Number sick.	Age.	Number sick.	Age.	Number sick.
. .	. .	10	42	20	38	30	22	40	13	50	7	60	5	70	None.
1	4	11	37	21	36	31	12	41	2	51	5	61	None.	71	None.
2	14	12	46	22	39	32	6	42	9	52	4	62	3	72	None.
3	10	13	47	23	30	33	7	43	5	53	1	63	2	73	1
4	24	14	43	24	30	34	3	44	3	54	1	64	1	74	1
5	27	15	33	25	20	35	12	45	3	55	5	65	None.		
6	31	16	46	26	25	36	4	46	6	56	1	66	None.		
7	33	17	36	27	18	37	11	47	5	57	1	67	None.	81	1
8	42	18	32	28	16	38	9	48	4	58	. . .	68	None.		
9	35	19	42	29	8	39	5	49	4	59	1	69	2		
. .	220	. .	404	. .	260	. .	91	. .	54	. .	28	. .	13	. . .	3

This table gives us the ages of 1,071 patients, leaving a balance of thirty-three unaccounted for as to age. If these be again tabulated in decades, it will be shown that there were:

Under	10	years of age,	. . . . .	220
Over	10	and under 20,	. . . . .	404
"	20	" 30,	. . . . .	260
"	30	" 40,	. . . . .	91
"	40	" 50,	. . . . .	54
"	50	" 60,	. . . . .	26
"	60	" 70,	. . . . .	13
"	70	" 80,	. . . . .	2
"	80,		. . . . .	1

These figures further show us the interesting fact that, in this epidemic,

at least, the age most susceptible to the infection of typhoid fever is between ten and twenty, 404, or 37.7 per cent., of a total 1,071, being affected during these years, while the next most dangerous period is between the ages of twenty and thirty, 24.2 per cent., followed closely by the period from one to ten, with 20.5 per cent.

Although the period most liable to infection is between ten and twenty years, it was, in this epidemic, by no means the most fatal, as the following table of death percentages will show. Of the one hundred and fourteen who died—

14	were	under	10	years of age, or	6.36	per cent. of	220	ill.
28	were	over	10	and under 20, or	6.93	"	440	"
48	"	20	"	30, "	18.46	"	250	"
11	"	30	"	40, "	12.08	"	91	"
5	"	40	"	50, "	9.26	"	54	"
5	"	50	"	60, "	19.23	"	26	"
2	"	60	"	70, "	15.38	"	13	"
1	"	70	"	80, "	50	"	2	"

Of the measures taken for the general relief of the town I need not here speak in detail, as this has already been published elsewhere. Suffice it to say, a generous public responded generously, and funds came in on all sides. Philadelphia alone gave seven thousand three hundred and seventy-seven dollars. An efficient local citizens' relief committee was appointed, which distributed these funds in a careful and judicious manner.

A hospital was opened on May 12, in a large public school-building on Back street, and, with resident physicians and a corps of trained nurses from Blockley hospital, Philadelphia, did noble work among the needy and helpless. It was closed on July 31, having treated, in all, ninety-seven patients, with a death-roll of seven, three being moribund upon entering.

Of the treatment in this epidemic, it may be said that the variety was limited only by the number of physicians employed. One used veratrum viride, gelsemium, and morphia as regular treatment, with antipyrin to reduce temperature. Another, in the early stage of the epidemic, used calomel at first, with opium and acetate of lead, to control the bowels. Later, he used carbolic acid and iodine with good results; also nitrate of silver in selected cases.

Another used carbonate of ammonia and whisky throughout. Another the mineral acids. Another quinine, with nitrate of silver.

A number of physicians used the so-called specific treatment, iodine and carbolic acid, and with very good results.

Nearly all used quinine or antipyrin, at times, to reduce temperature. Many spoke highly of the latter drug, and a few spoke against it.

In the Plymouth hospital, one series of cases was treated with antipyrin, and a series of corresponding cases with quinine, to reduce temperature, good results being obtained in both. A careful comparison was made by

Drs. Dagget and Zanner of these two drugs, and the result of these investigations will be published by these gentlemen at an early day.

The routine treatment in the hospital, with a majority of cases, was carbolic acid, gtt. iii, with tinct. iodine, gtt. i, every three hours. Each patient also received a half ounce of whisky, with three ounces of milk, every three hours. When patients were delirious, a half ounce to an ounce of whisky was given every hour, with good success.

There were treated in the hospital from its opening, May 12, to its closing, July 31, ninety-four cases, exclusive of re-admissions. Of these, seven died and eighty-seven recovered. If, from the seven who died, we deduct the three who were moribund when entering, and who died within ten hours of the time of admission, we have a mortality of 4.24 per cent. The general mortality throughout the epidemic was a fraction over 10 per cent. This comparison shows the great advantage of careful nursing by trained assistants, as well as the desirability of having absolute control of patients during critical periods of the disease.

The average time spent in the hospital was between three and four weeks, though nearly all of the patients who entered had previously been ill from two to four weeks. Of the ninety-four admissions, six or seven were either doubtful cases or aborted typhoid. Each had been ill a week or two with prodromic symptoms, but recovered promptly under quinine tonic treatment, with carbolic acid and iodine. There were three autopsies held, and all showed the characteristic lesions of typhoid fever.

Very valuable records were kept in many instances, with interesting temperature charts, but as these are not essentially different from special cases of typhoid so often published elsewhere, and especially as they will be published in another form by Drs. Dagget and Zanner, a detailed history of them seems out of place in a report like this.

The epidemic presented many points of interest to medical men and furnished material sufficient for a complete study of typhoid fever. Here were found in great abundance the regular typical cases so graphically described in some of our treatises on typhoid fever. Here, too, were the varieties in their several classes—the irregular and the abnormal forms, and all the various complications that could be expected to arise in a series of more than a thousand cases.

The chief peculiarity of the epidemic was the gravity of the earlier cases—the high fever and delirium. It was no unusual circumstance for a physician to find upon his first visit a temperature of one hundred and four degrees and one hundred and five degrees; but, of course, many of these patients had been ill a few days before calling a physician. It was this characteristic, no doubt, that led to an error in diagnosis in the first week of the epidemic. So severe were the head symptoms as to suggest meningitis in many cases. As one medical gentleman expressed it, the earlier patients seemed brimful of the poison. From the 10th to the 20th of April, nearly

every patient had violent delirium and very high temperature; after that the epidemic seemed to settle down into more regular typhoid fever.

Another characteristic was the severe and repeated intestinal hemorrhages that occurred in many cases. At least six per cent. of the hospital cases were attacked with hemorrhages from the bowels, and from nine to ten per cent. were quite delirious. These figures may be used also as a fair estimate of these symptoms in patients treated at their homes. Some physicians reported but very few, and others a large number, of hemorrhages, but nearly all report diarrhœa as a prominent symptom throughout.

Among the abnormal cases that occurred, one physician reports a patient whose disease ran a regular course of eight weeks, with regular typhoid symptoms, whose temperature was never higher than 98.5 degrees. The physician was not called, however, until the patient had been ill nearly three weeks.

Extreme prostration, slow convalescence, and tendency to relapse, also seemed noteworthy in very many cases. As already stated, the average duration of disease in those who recovered was 8.28 weeks. This, no doubt, includes the whole time of illness, and not merely the time patients were confined to bed.

It is safe to say that this was one of the most remarkable epidemics in the history of typhoid fever, and it teaches us some important lessons, at fearful cost. One is, that in any case of typhoid fever, no matter how mild, nor how far removed from the haunts of men, the greatest possible care should be exercised in thoroughly disinfecting the poisonous stools. The origin of all this sorrow and desolation occurred miles away, on the mountain side, far removed from the populous town, and in a solitary house, situated upon the bank of a swift-running stream. The attending physician did not know that this stream supplied the reservoirs with drinking water. Here, if in any place, it might seem excusable to take less than ordinary precautions, but the sequel shows that in every case the most rigid attention to detail in destroying these poisonous germs should be enjoined upon nurses and others in charge of typhoid fever patients, while the history of this epidemic will but add another to the list of such histories, which should serve to impress medical men, at least, with the great necessity for perfect cleanliness—a lesson which mankind at large is slow to learn.

Another lesson taught by this history comes more nearly home to us all. The water companies throughout our land should be taught that they must furnish us the water for which we pay from the very best source that the country affords. Not only should they avoid the use of river water contaminated by sewage, but they should be compelled to remove from the banks of their streams and reservoirs not only all probable, but all possible, source of pollution.

A third very pertinent suggestion is in reference to the need of local boards of health, or of sanitary committees, having power to compel citizens of any plague-stricken town to stop spreading the cause of the disease. They should not be allowed to nurture in their houses and surrounding yards the poison which has already decimated their own households.

Disinfection should be compulsory, and all hygienic and sanitary regulations rigidly enforced.

Had the proper efforts been made in Plymouth when the true nature of the disease became known, the epidemic might have been stamped out in a few weeks, instead of continuing many months, furnishing hundreds of new cases, and causing the loss of many valuable lives.

In closing this report, it is a matter of great regret to be compelled to say, "The end is not yet." Notwithstanding the lessons taught and the warnings given, the sanitary condition of Plymouth is by no means what it should be. Many wells are, without doubt, affected, and the germs from undisinfected excreta in many parts of the town are only awaiting favorable conditions of development to spring into vigorous activity and cause additional sorrow and distress which could and should be avoided.

Lewis H. Taylor, M. D

Wilkes-Barre, Pa., *October 15, 1885.*

REPORT ON THE FINANCIAL COST OF THE PLYMOUTH EPIDEMIC OF TYPHOID FEVER.

By MORRIS STROUD FRENCH, M. D.

Dr. BENJAMIN LEE, *Secretary, and Gentlemen of the Pennsylvania State Board of Health:*

In reply to your letter requesting statistical information relative to the epidemic of typhoid fever which prevailed at Plymouth, Luzerne county, Pennsylvania, I would say that the total number of sick was 1,153, the population being estimated at about 8,000. Of the number attacked with the disease, 114 died. The proportion of deaths under treatment in the hospital was about 3 per cent., which is unsurpassed by the record of any other hospital in the world.

The expenses incurred by the epidemic are estimated at $67,100 17, of which amount $8,000 00 was consumed in running the hospital.

Of those who were ill with the disease and recovered, the loss of earnings during their illness was found to be $30,020 08. Thus, the total cost of the epidemic is reckoned at $97,120 25.

By the 114 deaths, a monthly earning of $1,534 96 ceased, showing a loss of $18,419 52 per year in incomes.

Five thousand dollars were contributed by the State of Pennsylvania for the maintenance of the hospital. The remainder of the funds used were contributed by the good citizens of Philadelphia, New York, Wilkes-Barre, Scranton, and various localities in the State.

The accompanying lists will show you the names and ages of the individuals who were ill, time of illness, and the cost of sickness. The number of cases in each ward is shown, number of deaths per ward, and cost of sickness by wards.

Very respectfully,

M. S. FRENCH, M. D.

1423 WALNUT STREET, *Philadelphia.*

The difference in the number of cases of illness, as given by Dr. Taylor in his report and by myself, is due to the fact that he has carefully studied the records of cases, and has thrown aside those commencing prior to April, and all other than typhoid fever. Eleven hundred and fifty-three represents the entire number of sick in the village.

TABULAR STATEMENT OF THE NUMBER OF CASES OF TYPHOID FEVER IN THE PLYMOUTH EPIDEMIC, WITH COST OF SICKNESS IN EACH CASE.

First Ward.

Number.	Name.	Age.	Time of sickness.	Died.	Cost of sickness.	Loss per month of those who died.
1	Carrie Walton,	10 years,	6 wks.,		$30 00	
2	Andrew Harrison,	28 "	4 m'ths,		30 00	
3	John Warren,	48 "	18 wks.,		60 00	
4	Annie Warren,	47 "	12 "		30 00	
5	Philip Evans,	26 "	12 "		50 00	
6	Rhoda Snyder,	69 "	8 "		40 00	
7	Dora Mitchell,	52 "	3 "	Died,	100 00	
8	John Mitchell,	23 "	6 "		30 00	
9	Patrick Hefferan,	20 "	8 "		50 00	
10	Johanna Hefferan,	16 "	8 "			
11	Annis Hefferan,	9 "	8 "			
12	Daniel Hefferan,	7 "	10 "			
13	Margaret Hefferan,	24 "	13 "		130 00	
14	Patrick Eagan,	30 "	16 "		80 00	
15	Ammia Eagan,	10 "	12 "			
16	Anthony Flynn,	27 "	12 "		50 00	
17	Frank Stevens,	29 "	4 "		25 00	
18	Mary Downling,	17 "	12 "		50 00	
19	Del. Wolfe,	9 "	12 "		50 00	
20	Eugene Wolfe,	21 "	16 "		15 00	
21	George Banks,	19 "	4 "		10 00	
22	Liddy Banks,	13 "	8 "		30 00	
23	Mrs. Miner Moyer,	46 "	8 "		40 00	
24	Miner Moyer,	46 "	2 "		8 00	
25	Mary Evans,	22 "				
26	Alice Richardson,	26 "	8 "		35 00	
27	Laura Welch,	26 "	1 "	Died,		
28	Thomas Maggs,	19 "	6 "		10 00	
29	Annie Jones,	20 "	1 "	Died,		
30	Josie Jones,	12 "	12 "			
31	Sarah Reese,	21 "	4 "		150 00	
32	Ella Reese,	10 "	12 "			
33	Margaret Reese,	9 "	12 "			
34	Daniel Reese, Jr.,	37 "	16 "			
35	Lewis Thomas,	12 "	4 "			
36	George Caswell,	24 "	4 "		75 00	
37	Carrie Nesbitt,	9 "	6 "		35 00	
38	Roxia Pierson,	27 "	2 "	Died,	100 00	
39	Margaret Munday,	13 "	12 "		25 00	
40	Mrs. Lizzie Van Loon,	19 "	12 "		150 00	
41	Mrs. Mary Phillips,	28 "	8 "		150 00	
42	Mrs. George Teppans,	30 "	8 "		100 00	
43	William Upton,	12 "	4 "		45 00	
44	Samuel Upton,	8 "	5 "		30 00	
45	Sarah Bresslehan,	12 "	8 "		150 00	
46	Mary Bresslehan,	9 "	4 "			
47	Maggie Bresslehan,	5 "	8 "			
48	Dinnis Bresslehan,	40 "	8 "			
49	Mrs. Henry Ayers,	30 "	12 "	See 3d Wd		
50	Thomas Spencer,	49 "	12 "		45 00	
51	Agnes Love,	8 "	4 "		20 00	
52	Mertell Love,	4 "	4 "		20 00	
53	Joseph Williams,	29 "	2 "	Died,	100 00	
54	Frank Erioml,	21 "	20 "		50 00	
55	Ines Vanderhoof,	17 "	4 "		10 00	
56	Louisa Eason,	8 "	12 "		40 00	
57	Mary Lloyde,	43 "	12 "		15 00	
58	Elizabeth Lloyde,	17 "	12 "		20 00	
59	Mrs. Annie Rapson,	30 "	3 "		9 00	
60	Emma Bixon,	11 "	12 "		40 00	

TABULAR STATEMENT, ETC.—Continued.

First Ward—*Continued.*

Number.	NAME.	Age.	Time of sickness.	Died.	Cost of sickness.	Loss per month of those who died.
61	Joseph Davey,	5 years,	12 wks.,		$15 00	
67	John Canfield,	25 "	20 "		15 00	
68	Jennett Miles,	10 "	8 "		15 00	
69	Gwen Williams,	8 "	10 "		30 00	
70	William Royer,	46 "	2 "	Died,		$21 00
71	Bruce Royer,	16 "	4 "	"		18 00
72	Priscilla Royer,					
73	Randolf Royer,	19 "	8 "		250 00	
74	Claud Royer,	13 "	8 "			
75	Charles Royer,	14 "	8 "			
76	Clarence Royer,	8 "	6 "			
77	Carroll Royer,	9 "	8 "			
78	Mary Royer,	10 "	9 "			
79	Malinda Stephens,	17 "	12 "		60 00	
80	Rena Stephens,	17 "	12 "		50 00	
81	U. S. Pratt,	15 "	20 "		62 00	
82	Alfred Nesbitt,	29 "	16 "		30 00	
83	Asher Nesbitt,	23 "	16 "		50 00	
84	Frederick Swingle,	10 "	4 "		10 00	
85	Thomas Brokmohier,	13 "	4 "		10 00	
86	Ida Lamerieux,	8 "	6 "		30 00	
87	William Morgan,	19 "	4 "			
88	Samuel Morgan,	15 "	6 "			
89	Josiah Morgan,	6 "	6 "		75 00	
90	Corodry Morgan,	8 "	4 "			
91	Evor Morgan,	7 "	4 "			
92	Humphrey Hughes,	10 "	12 "		16 00	
93	John Mutchler,	16 "	8 "		50 00	
94	Lizzie Mutchler,	14 "	8 "		50 00	
95	Samuel Finch,	16 "	8 "		30 00	
96	Jane Cardick,	36 "	12 "			
97	William Cardick,	12 "	12 "			
98	John Cardick,	8 "	12 "		110 00	
99	Mary Cardick,	5 "	12 "			
100	Alexander Rolsten,	31 "	12 "		52 00	
101	Thomas Williams,	19 "	8 "			
102	George Williams,	13 "	8 "			
103	May Williams,	9 "	8 "		70 00	
104	William Williams,	6 "	8 "			
105	Elsa May,	16 "	6 "		20 00	
106	Minnie Bennett,	18 "	4 "		10 00	
107	John Bennett,	5 "	4 "		10 00	
108	O. Turnbull,	29 "	5 m'ths,		175 00	
109	Annie Turnbull,	20 "	4 "		150 00	
110	William Keefe,	32 "	3 "		50 00	
111	Mary O'Kane,	20 "	10 wks.,			
112	Alice O'Kane,	16 "	4 "			
113	Edward O'Kane,	12 "	17 days,		275 00	
114	Hugh O'Kane,	6 "	3 m'ths,			
115	Thomas Morcum,	7 "	1 "		10 00	
116	Rebecca Stephens,	8 "	2 "		20 00	
117	Pardee Bisher,	19 "	3 "			
118	Daisy Bisher,	9 "	2 "		162 00	
119	Mary Rooney,	50 "	3 "		60 00	
120	Rebecca Moss,	26 "	2 wks.,	Died,	100 00	
121	Martha Harrison,	25 "	4 "		20 00	
122	Maggie Harrison,	20 "	8 "		50 00	
123	John Lewisky,	30 "	8 "		30 00	
124	J. W. Stevers,	47 "	8 "		25 00	
125	Mrs. Vaugh,	50 "	12 "		30 00	

TABULAR STATEMENT, ETC.—Continued.

First Ward—*Continued.*

Number.	Name.	Age.	Time of sickness.	Died.	Cost of sickness.	Loss per month of those who died.
126	John Naus,	12 years,	12 wks.,		$35 00	
127	Evan Hughes,	15 "	8 "		15 00	
128	John Evans,	26 "	16 "		100 00	
129	Mrs. John Evans,	24 "	12 "			
130	Mrs. Thomas Bonson,	25 "	4 "	Died,	75 00	
131	Mary Walp,	26 "	12 "		40 00	
132	Mrs. Hugh Shandley,	52 "	12 "		40 00	
133	Lizzie Shandley,	12 "	16 "		45 00	
134	Della Weil,	11 "	8 "		30 00	
135	Jule Weil,	15 "	4 "			
136	Sarah Stevens,	16 "	12 "		30 00	
137	Carrie Stevens,	3 "	3 "	Died,	50 00	
138	Samuel Stevens,	10 "	12 "		25 00	
				10	$5,094 00	$39 00

Second Ward.

1	George Larmoth,	9 years,	8 wks.,		$40 00	
2	Mary Larmoth,	4 "	8 "		40 00	
3	William Halleck,	19 "	12 "		49 00	
4	Harry Van Buskirk,	2 "	5 "	Died,	25 00	
5	Phillip Bellis,	10 "	6 "		32 00	
6	Malina Wolfe,	40 "	21 days,		40 00	
7	Sarah Spray,	19 "	8 wks.,		50 00	
8	Mary Thomas,	32 "	4 "	Died,	28 00	
9	William Davis,	31 "	39 days,		40 00	
10	Emma Ballamy,	20 "	4 wks.,			
11	Sarah Ballamy,	14 "	5 "		45 00	
12	William Ballamy,	10 "	2 "			
13	Boyd Cooper,	9 "	31 days,		28 00	
14	George Rennard,	16 "	8 wks.,			
15	Fanny Rennard,	14 "	4 "		55 00	
16	Lizzie Rennard,	10 "	7 "			
17	Mary Hicks,	7 "	30 days,	Died,		
18	Rosannah Hicks,	15 "	6 wks.,	"		
19	Joseph Hicks,	18 "	15 "			
20	John Hicks,	12 "	4 "		439 35	
21	Elijah Hicks,	10 "	10 "			
22	George Hicks,	2 "	6 "			
23	Lydia Shank,	62 "	16 "		50 00	
24	Mary Pierson,	47 "	4 "		25 00	
25	Charley Pierson,	19 "	3 "		25 00	
26	Catharina Boyle,	30 "	2 "		15 00	
27	William Jones,	23 "	18 "		35 00	
28	Mamie Dennis,	9 "	20 "	Died,		
29	Francis Dennis,	7 "	20 "		40 00	
30	Oliver Dennis,	5 "	16 "			
31	Jane Dennis,	3 "	8 "			
32	John Morrisey,	19 "	5 "		60 00	
33	Agnes Dunn,	22 "	2 "		20 00	
34	Thomas Morrisey,	16 "	5 "	Died,	60 00	
35	Lizzie Powell,	19 "	4 "		15 00	
36	Joseph Clyms,	19 "	14 "		210 00	
37	Arthur Clyms,	4 "	14 "			
38	Austin Ginley,	10 "	4 "		40 00	
39	James Ginley,	6 "	1 "			
40	Charles Mask,	26 "	5 "		11 00	

TABULAR STATEMENT, ETC.—Continued.

Second Ward—*Continued.*

Number.	NAME.	Age.	Time of sickness.	Died.	Cost of sickness.	Loss per month of those who died.
41	Lydia Shaffer,	16 years,	7 wks.			
42	Blanch Shaffer,	9 "	10 "			
43	John Jenkins,	16 "	5 "		$30 00	
44	Lizzie Gordon,	23 "	12 "		27 00	
45	Ida Howells,	23 "	7 "			
46	Harriet Howells,	2 "	7 "			
47	Georgina Bruce,	13 "	8 "		30 00	
48	Sidney Oldfield,	20 "	6 "		40 00	
49	Luke Rooney,	23 "	8 "		30 00	
50	Jennie Copeland,	18 "	16 "		50 00	
51	Alice Young,	21 "	8 "		35 00	
52	Elizabeth Young,	18 "	7 "			
53	Edward Race,	8 "	10 "		40 00	
54	Maggie Weagley,	22 "	6 "			
55	Virgie Weagley,	17 "	6 "			
56	Nicholas Mullen,	19 "	5 "		36 00	
57	Samuel Mullen,	16 "	12 "			
58	Michael Tinney,	26 "	1 "	Died,	60 00	$5 00
59	Peter Becker,	22 "	18 "		165 00	
60	Joseph Becker,	20 "	17 "			
61	James Becker,	15 "	18 "			
62	Lavina Becker,	55 "	16 "			
63	Thomas McTague,	23 "	12 "		110 00	
64	Annie McTague,	20 "	9 "			
65	Patrick McTague,	16 "	9 "			
66	Mary Forrid,	22 "	2 "		15 00	
67	Mary Ballomy,	12 "	5 "		15 00	
				7	$2,200 35	$5 00

Third Ward.

1	Charles Hooven,	9 years,	5 "		$25 00	
2	Joseph Hooven,	5 "	5 "		25 00	
3	John Castner,	38 "	5 "	Died,	90 00	$75 00
4	Gertie Miller,	5 "	5 "		50 00	
5	Mrs. John Van Buskirk,	31 "	3 m'ths,		65 00	
6	Mrs. Henry Ayers,	34 "	4 "		85 00	
7	Mamie Castner,	5 "	2 "		40 00	
8	Mrs. G. Banthe,	27 "	2 "		40 00	
9	Annie Morgan,	5 "	2 "		30 00	
10	George Williams,	8 "	2 "		50 00	
11	Agnes Reeves,	9 "	3 "		75 00	
12	Martin Farrell,	24 "	4 "		75 00	
13	Mrs. Martin Farrell,	21 "	6 "		35 00	
14	Martha Reeves,	13 "	2 "	May 1,	50 00	
15	Reve Morgan,	31 "	3 wks.,	April 17,	55 00	30 00
16	Gwene Morgan,	4 "	3 "		25 00	
17	Willie Davis,	5 "	5 "		65 00	
18	John Detweiler, Jr.,	23 "	4 "		16 00	
19	John Cooper,	27 "	13 "		100 00	
20	Patrick Hollis,	12 "	8 "		35 00	
21	Bridget Hollis,	14 "	8 "		35 00	
22	Mrs. Thomas Hollis,	30 "	8 "		50 00	
23	Albert Gerton,	6 "	6 "		25 00	
24	Jessie Loderick,	8 "	2 "		15 00	
25	Oscar Loderick,	9 "	7 "		12 00	
26	Georgia Loderick,	6 "	2 "		12 00	
27	Evan Williams,	25 "	4 "	Died,	55 00	45 00

TABULAR STATEMENT, ETC.—Continued.

Third Ward—*Continued.*

Number.	Name.	Age.	Time of sickness.	Died.	Cost of sickness.	Loss per month of those who died.
28	Mrs. Evan Williams,	24 years	8 wks.,		$40 00	
29	Job D. Powell,	40 "	16 "		60 00	
30	Arthur Powell,	10 "	8 "		15 00	
31	Gertie Jones,	8 "	4 "		25 00	
32	Lizzie Jones,	15 "	8 "		65 00	
33	Mrs. Benjamin Walton,	41 "	16 "		75 00	
34	Eddy Walton,	8 "	4 "		25 00	
35	Charley Walton,	5 "	8 "		35 00	
36	Barbara Walton,	1 "	3 "		10 00	
37	William Williams,	7 "	12 "		50 00	
38	Thomas Williams,	11 "	4 "		25 00	
39	Jeannet Williams,	10 "	5 "		28 00	
40	Annie Williams,	5 "	4 "		25 00	
41	Annie McLair,	31 "	12 "		50 00	
42	Mrs. Conley,	42 "	8 "		40 00	
43	Enos Schadden,	33 "	12 "	June 14,	175 00	$18 00
44	Mamie Hughey,	22 "	8 "		30 00	
45	Willie Hughey,	5 "	2 m'ths		30 00	
46	Ralph Hughey,	2 "	3 "		35 00	
47	Daniel Fitzer,	17 "	3 "		75 00	
48	Daisey Smith,	7 "	2 "		25 00	
49	Richard Smith,	5 "	1 "		25 00	
50	Joseph Hale,	22 "	2 "		50 00	
51	Rebecca Davis,	15 "	2 "		50 00	
52	Mrs. David Evans,	23 "	3 "		50 00	
53	William Morris,	9 "	4 "		90 00	
54	Mrs. Jonah Jennings,	53 "	3 "		75 00	
55	Charles Griffith,	18 "	3 "		75 00	
56	Jennie Griffith,	21 "	3 "		75 00	
57	Martin Churchill,	42 "	3 "		10 00	
58	Bella Karst,	5 "	1 "	May, 11	15 00	
59	George Karst,	10 "	3 "		35 00	
60	Minnie Karst,	15 "	2 "		40 00	
61	Sarah Price,	12 "	2 "		30 00	
62	Jane Price,	8 "	2 "		30 00	
63	Benjamin Price,	3 "	2 "		20 00	
64	William Wright,	14 "	2 "			
65	Thomas Wright,	8 "	2 "		30 00	
66	Mrs. Annie Wright,	33 "	2 "		50 00	
67	John Eddy,	19 "	2 "		36 00	
68	Elizabeth Sorber,	9 "	3 "		35 00	
69	James Flanagan,	19 "	3 "		60 00	
70	Mary Flanagan,	12 "	3 "		35 00	
71	John Flanagan,	17 "	2 "		30 00	
72	Annie Graul,	37 "	4 "		125 00	
73	Walter Kline,	7 "	2 "		30 00	
74	Annie Driscoll,	13 "	4 "		60 00	
75	George Carroll,	15 "	3 "		45 00	
76	William S. Jones,	48 "	4 "		65 00	
77	Robert Griffiths,	26 "	4 "		50 00	
78	Robert Jones,	26 "	1 "		25 00	
79	David Reese,	12 "	3 "		50 00	
80	Edith Reese,	7 "	2 "		25 00	
81	Benjamin Walten,	16 "	2 "		30 00	
82	Maggie Evans,	12 "	3 "		75 00	
83	Jacob Evans,	8 "	3 "		40 00	
84	Joseph Evans,	19 "	3 "		50 00	
85	Thomas Evans,	11 "	2 "		40 00	
86	Willie Evans,	9 "	3 "		25 00	
87	Daniel Evans,	46 "	1 "		30 00	

TABULAR STATEMENT, ETC.—Continued.

Third Ward—*Continued.*

Number.	Name.	Age.	Time of sickness.	Died.	Cost of sickness.	Loss per month of those who died.
88	Thomas Davis,	35 years,	1 m'ths,	May 4,	$100 00	$75 00
89	Daniel Davis,	7 "	2 "		50 00	
90	Daniel Reese,	17 "	3 "		90 00	
91	Noah Lewis,	37 "	4 "		95 00	
92	William Davis,	5 "	2 "		50 00	
93	Andrew Hines,	24 "	2 "		21 00	
94	Elizabeth Minich,	28 "	2 "		20 00	
95	John T. Griffith,	60 "	2 wks.,		30 00	
96	Gwilliam Lewis,	22 "	3 "		75 00	
97	John Lewis,	20 "	4 "		90 00	
98	Richard Lewis,	18 "	3 "		65 00	
99	Ollwea Lewis,	8 "	3 "		50 00	
100	William Williams,	23 "	4 "		90 00	
101	Mrs. William Williams,	40 "	1 "	June 20,	75 00	
102	Mrs. Michael Heffern,	40 "	3 "		75 00	
103	David Williams,	5 "	2 "		30 00	
104	Sarah Williams,	8 "	4 "		75 00	
105	Charles Beaty,	13 "	3 "		35 00	
106	Edward Beaty	12 "	2 "		28 00	
107	Anna Manging,	60 "	3 "		35 00	
108	William P. Davis,	42 "	3 "		50 00	
109	Mary Evans,	28 "	3 "		50 00	
110	Lizzie Davis	7 "	3 "		25 00	
111	Richard Lickis,	28 "	3 "		75 00	
112	Harry Long,	7 "	1 "		20 00	
113	Frank Long,	4 "	1 "		20 00	
114	Katie Long,	10 "	3 "		75 00	
115	Willie Krothe,	21 "	4 m'ths,		150 00	
116	Gweney Krothe,	22 "	2 "		50 00	
117	Mrs. Martha Phillips,	25 "	3 "		75 00	
118	Mrs. William Harris,	27 "	2 "		50 00	
119	John Daniels,	30 "	3 "		50 00	
120	Cora Daniels,	4 "	3 "		25 00	
121	Evan Daniels,	10 "	2 "		25 00	
122	Mrs. John Daniels,	27 "	2 "		30 00	
123	David Pugh,	14 "	2 "		35 00	
124	Esther Turner,	15 "	6 "		150 00	
125	Charles Turner,	60 "	3 "		50 00	
126	Robert Willis,	21 "	4 "		40 00	
127	Thomas Edmunds,	26 "	3 "		55 00	
128	Richard Roberts,	35 "	2 "		50 00	
129	Mrs. Mark Krotzer,	45 "	3 "		50 00	
130	Elsie Krotzer,	20 "	3 "		35 00	
131	Dennis Mack,	13 "	2 "		20 00	
132	James Gill,	33 "	4 "		90 00	
133	Morris McGovern,	3 "	2 "		25 00	
134	Mrs. Kate McGovern,	28 "	3 "		40 00	
135	John Williams,	19 "	3 "		50 00	
136	Mrs. Annie Pollen,	52 "	4 "		100 00	
137	Frank Pollen,	12 "	3 "		50 00	
138	Mrs. Edward Rafter,	26 "	3 "		100 00	
139	Rebecca Gillon,	9 "	2 "		40 00	
140	Luke Somers,	16 "	2 "		30 00	
141	John Miles,	25 "	3 "		65 00	
142	Annie Watkins,	22 "	2 "		50 00	
143	John Williams,	20 "	3 "		60 00	
144	David Walters,	23 "	1 "	April 30,	25 00	50 00
145	Cliver Reve,	17 "	1 "	May 30,	70 00	35 00
146	Mrs. Mary Reese,	21 "	1 "	April 17,	45 00	
147	Laurance Farrell,	11 "	3 "		20 00	

TABULAR STATEMENT, ETC.—Continued.

Third Ward—*Continued.*

Number.	Name.	Age.	Time of sickness.	Died.	Cost of sickness.	Loss per month of those who died.
148	Tim Farrell,	15 years,	2 m'ths,		$20 00	
149	Robert Farrell,	7 "	2 "		20 00	
150	Bridget Farrell,	4 "	1 "		10 00	
151	Ellen Merian,	15 "	2 "		40 00	
152	Olive Lamerant,	13 "	2 "		40 00	
153	John Curley,	40 "	1 "		25 00	
154	Mary Curley,	4 "	3 "		40 00	
155	Elsie Garrison,	39 "	14 wks.,		175 00	
156	Henry Kendic,	5 "	6 "			
157	Irvin Kendic,	15 "	6 "		15 00	
158	George Kendic,	18 "	16 "			
159	David Douglas,	11 "	6 "		12 00	
160	Samuel Williams,	19 "	6 "			
161	David Williams,	17 "	6 "		90 00	
162	William Williams,	14 "	6 "			
163	Martha Davis,	10 "	8 "		35 00	
164	Kate Smake,	38 "	8 "		38 00	
165	Mary Jones,	38 "	12 "			
166	Ida Preedhue,	16 "	22 "			
167	Jane Preedhue,	13 "	6 "		250 00	
168	Mary Preedhue,	55 "	10 "			
169	William Preedhue,	55 "	3 "			
170	Lauretta John,	27 "	7 "		50 00	
171	Maidea Burns,	23 "	8 "	May 30,	80 00	
172	Curn Hearn,	22 "	12 "		75 00	
173	Conda Hughey,	25 "	2 "	June 20,	25 00	
174	Martin Hefferan,	17 "	2 "		30 00	
175	Edith Jones,	7 "	5 "			
176	William T. Jones,	21 "	13 "			
177	John T. Jones,	19 "	5 "	Died,	198 00	
178	Tilison Jones,	16 "	8 "			
179	Mary Jones	11 "	7 "			
180	Samuel Hawkins,	29 "	15 "		110 00	
181	John Hopwood,	8 "	4 "		20 00	
182	Annie Curly,	8 "	5 "		20 00	
183	Luther Davis,	11 "	14 "		40 00	
184	David Davis,	8 "	5 "	Died,	25 00	
185	Margaret Davis,	6 "	5 "		15 00	
186	John Evans,	18 "	12 "		41 00	
187	Sarah Williams,	23 "	5 "		24 00	
188	Gwen Lewis,	16 "	15 "		35 00	
189	Lizzie Lewis,	13 "	12 "		50 00	
190	Kate Davies,	16 "	5 "		30 00	
191	Thomas Davies,	14 "	4 "		20 00	
192	Edward Jenkins,	23 "	6 "		30 00	
193	Lizzie Richards,	21 "	8 "		30 00	
194	John Richards,	15 "	8 "		45 00	
195	David Richards,	21 "	9 "		55 00	
196	Thomas Davis,	20 "	20 "		160 00	
197	William Beven,	31 "	16 "		75 00	
198	Mary Edwards,	11 "	15 "		30 00	
199	Edward Edwards,	14 "	7 "		15 00	
200	William Jones,	21 "	8 "		38 00	
201	Hannah Jones,	15 "	10 "		38 00	
202	Lewis Richards,	18 "	10 "		46 35	
203	Jane Richards	16 "	5 "		11 40	
204	Thomas Bruner,	31 "	20 "		50 00	
205	Thomas Evans,	35 "	10 "		27 00	
206	Morgan Evans	12 "	6 "		10 00	
207	Thomas Hopwood,	35 "	8 "		20 00	
208	Mary Hopwood,	4 "	8 "			

TABULAR STATEMENT, ETC.—Continued.

Third Ward—*Continued.*

Number.	NAME.	Age.	Time of sickness.	Died.	Cost of sickness.	Loss per month of those who died.
209	Daniel Chase,	18 years,	4 m'ths,			
210	Thomas Close,	12 "	7 "		$112 50	
211	Margaret Close,	17 "	5 "			
212	Reese Close,	7 "	8 "			
213	John R. Morris,	42 "	12 "		100 00	
214	Robert Morris,	12 "	12 "		90 00	
215	John Carver,	21 "	8 "		40 00	
216	William Carver,	14 "	8 "		55 00	
217	Frank Carver,	10 "	10 "		55 00	
218	William James,	24 "	14 "		95 00	
219	Nettie James,	2 "	3 "		8 00	
220	Elizabeth Pilgert,	24 "	4 "	May 19,	80 00	
221	Lenna Pilgert,	1 "	3 "	June,	25 00	
222	George Shelly,	40 "	13 "		79 00	
223	Max Shelly,	7 "			65 00	
224	Morgan Beven,	30 "	6 "		15 00	
225	Doll Shelly,	16 "	8 "		74 00	
226	Alexander Monk,	25 "	8 "		40 00	
227	Joseph Thomas,	26 "	13 "		60 00	
228	Walter George,	30 "	14 "		100 00	
229	Edith George,	7 "	8 "		40 00	
230	Henry Longmore,	28 "	14 "		100 00	
231	Mrs. Ellen Longmore,	23 "	14 "		80 00	
232	Benjamin Boyer,	40 "	12 "		50 00	
				17	$10,900 25	$320 00
	Cash distributed by Third Ward Committee to sick,				3,611 00	
					$14,511 25	

Fourth Ward.

1	Mary Jones,	23 years,	7 weeks,		$60 00	
2	Harriet Kuschka,	10 "	9 "		100 00	
3	Alice Richards,	26 "	26 days,		50 00	
4	Richard Lewis,	62 "	6 weeks,	May 16, '85,	200 00	$70 00
5	Ropola Hirsch,	44 "	3 "		60 00	
6	Johanna Hertz,	21 "	11 "		220 00	
7	Emma Miller,	8 "	3 "		30 00	
8	Mollie Wormster,	23 "	10 "		300 00	
9	Rev. Daniel Savage,	51 "	2 "		15 00	
10	Maria Savage,	11 "	3 months,		75 00	
11	F. L. Savage,	2 "	2 "		25 00	
12	Ida Savage,	7 "	3 "		45 00	
13	Alice Savage,	21 "	1 "		20 00	
14	Albert Savage,	3 "	5 weeks,		35 00	
15	Fred. Pierce,	22 "	2 months,		240 00	
16	Harry W. Pierce,	15 "	5 weeks,		100 00	
17	Mary Forkum,	24 "	2 months,		100 00	
18	William Seyl,	20 "	39 days,	May 28, '85,	175 00	26 00
19	Julia Seyl,	26 "	38 "		150 00	
20	John R. Lynch,	50 "	24 "	May 23, '85,	163 00	50 00
21	E. J. Lynch,	24 "	6 "		5 00	
22	D. W. Orndoff,	22 "	12 "	May 30, '85,	90 00	35 00
23	William John Jones,	11 "	1 month,		45 00	
24	Mrs. James Lee,	34 "	7 weeks,		100 00	
25	Ellen Lee,	12 "	5 "		50 00	
26	Lydia Stevers,	18 "	4 "		30 00	

TABULAR STATEMENT, ETC.—Continued.

Fourth Ward—*Continued.*

Number.	Name.	Age.	Time of sickness.	Died.	Cost of sickness.	Loss per month of those who died.
27	Ida Stevers,	14 years,	5 weeks,		$35 00	
28	William Stevers,	11 "	3 "		20 00	
29	Celia Stevers,	8 "	4 "		25 00	
30	Benry Bamford,	25 "	6 "		50 00	
31	Rust Lees,	11 "	5 "		50 00	
32	Stewart Ferguson,	3 "	3 "		15 00	
33	Jennie Ferguson,	9 "	2 "		15 00	
34	C. H. Edwards,	30 "	5 "		50 00	
35	Edward Simons,	13 "	6 "		50 00	
36	Peter Kehoe,	21 "	3 months,		125 00	
37	Joseph Schweitzer,	35 "	2 weeks,		15 00	
38	Lucy Winters,	6 "	7 "		125 00	
39	Theodore Sweitzer,	17 "	42 "		75 00	
40	John Sinellia	22 "	32 "	May 27, '85,	165 00	
41	James Lindsay,	35 "	4 months,		140 00	
42	Jane M. Lindsay,	6 "	30 days,		35 00	
43	John Depoet,	20 "	35 "		27 00	
44	William Clayman,	33 "	35 "		100 00	
45	Lizzie Davis,	10 "	4 months,		150 00	
46	Sally Davis,	7 "	2 "		100 00	
47	John Vanloon,	22 "	4 "		125 00	
48	Sally Vanloon,	19 "	4 "		125 00	
49	Charles Vanloon,	16 "	3 "		75 00	
50	Mary Vanloon,	14 "	1 "		30 00	
51	Charles Vanloon, jr.,	40 "	2 "		80 00	
52	Jane Nesbitt,	62 "	1 "	May 22, '85,	148 00	
53	Julia Honeywell,	31 "	1 "		50 00	
54	James Moore,	18 "	1½ "		50 00	
55	Ashwell Moore,	16 "	1½ "		50 00	
56	Patrick Mangan,	23 "	1 "	Sept. 21, '85,	100 00	
57	Michael Mangan,	18 "	3 "		150 00	
58	Dommick Mangan,	15 "	4 "		125 00	
59	Kate Mangan,	19 "	3 "		100 00	
60	George McAlarney,	25 "	5 weeks,		100 00	
61	Frances McAlarney,	23 "	4 "		75 00	
62	James McAlarney,	20 "	4 "	May,	200 00	$40 00
63	Stella McAlarney,	18 "	3 "		75 00	
64	Maud McAlarney,	8 "	4 "		50 00	
65	James McAlarney,	16 "	5 "		50 00	
66	John McAlarney,	10 "	4 "		50 00	
67	Michael O'Brien,	28 "	2 months,		100 00	
68	Mary O'Brien,	19 "	2 "		75 00	
69	Daniel O'Brien,	13 "	2 "		75 00	
70	William Cleary,	50 "	2 weeks,		20 00	
71	Ann Cleary,	41 "	4 "		40 00	
72	William Cleary,	14 "	8 "		100 00	
73	Ann B. Curley,	8 "	3 months,		150 00	
74	Edward Finn,	27 "	2 weeks,	May 3, '85,	200 00	50 00
75	John Spair,	49 "	3 months,	May 3, '85,	125 00	35 00
76	John Buckingham,	15 "	2 "	April,	100 00	20 00
77	Fred. Buckingham,	14 "	2 "		100 00	
78	Sidney Buckingham,	13 "	2 "		70 00	
79	Sidney Buckingham,	11 "	3 "		75 00	
80	Wesley Buckingham,	10 "	2 weeks,	April,	100 00	
81	Minnie Buckingham,	8 "	3 months,		75 00	
82	Mary Buckingham,	5 "	4 weeks,		50 00	
83	Ellen Wall,	12 "	4 "		75 00	
84	James Bryant,	26 "	3 months,		150 00	
85	Maria Bryant,	22 "	4 weeks,		50 00	
86	John Hart,	28 "	12 "		100 00	

TABULAR STATEMENT, ETC.—Continued.

Fourth Ward—*Continued.*

Number.	NAME.	Age.	Time of sickness.	Died.	Cost of sickness.	Loss per month of those who died.
87	Mary Hart,	6 years,	7 weeks,		$40 00	
88	Joseph McTague,	11 "	2 months,		100 00	
89	Sarah Sharpe,	8 "	1 "		50 00	
90	Edward Gilroy,	27 "	2 "	June —,	100 00	
91	Clara Gilroy,	20 "	1 "		50 00	
92	Edward Brown,	28 "	2 "		50 00	
93	Kate Henry,	30 "	5 weeks,		40 00	
94	David Henry,	8 "	7 "		40 00	
95	William Rodden,	24 "	6 "		75 00	
96	E. P. Jones,	30 "	7 "		75 00	
97	Hannah Jones,	27 "	5 "		75 00	
98	Geraldine Shaw,	37 "	3 "	May 1, '85,	100 00	
99	John P. Shaw,	16 "	3 "		50 00	
100	Charles Shaw,	14 "	5 "		50 00	
101	Martin Shaw,	12 "	3 "		30 00	
102	Ann B. Shaw,	10 "	3 "		25 00	
103	Bruce Shaw,	7 "	3 "		25 00	
104	Janet Walters,	39 "	5 "		15 00	
105	Deffy Walters,	3 "	7 "		15 00	
106	Delia Atherton,	37 "	7 "		75 00	
107	James M. Atherton,	39 "	2 months,		100 00	
108	Martha Atherton,	12 "	4 weeks,		50 00	
109	John T. Berry,	29 "	2 "	May —,	200 00	
110	Janet Weston,	4 "	2 "		10 00	
111	Patrick Jennings,	25 "	2 months,		100 00	
112	Sarah Roberts,	31 "	2 "		100 00	
113	Sarah Llewellyn,	40 "	4 weeks,		100 00	
114	Agnes Llewellyn,	16 "	7 "		100 00	
115	William Mainwaring,	18 "	4 "		30 00	
116	Mary Rane,	28 "	45 days,	June 6, '85,	1,000 00	
117	John Brennan,	10 "	5 weeks,		15 00	
118	Ella Brennan,	13 "	8 "		15 00	
119	Harry Reese,	3 "	4 "		20 00	
120	Ann Leibengut,	22 "	5 "		21 00	
121	Julia Jacobs,	17 "	13 days,	April —,	150 00	
122	Stella Jacobs,	4 "	12 "	April —,	150 00	
123	Charles Jacobs,	22 "	2 weeks,		100 00	
124	May Jacobs,	8 "	3 months,		200 00	
125	Aggie Love,	22 "	6 days,	April 23, '85,	125 00	$40 00
126	Isaac Benner,	30 "	2 months,		75 00	
127	John Benner,	4 "	2 "		50 00	
128	Charles Yaple,	26 "	4 "		100 00	
129	Agnes Berry,	6 "	5 weeks,		50 00	
130	James Crooks,	29 "	2 months,	July —,	100 00	20 00
131	John Ortz,	32 "	2 weeks,	May 15, '85,	90 00	
132	Ann Ortz,	20 "	2 "		50 00	
133	M. A. Perse,	35 "	8 "		200 00	
134	Charles Shupp,	33 "	13 "		150 00	
				20	$12,019 00	$286 00

TABULAR STATEMENT, ETC.—Continued.

Fifth Ward.

Number.	Name.	Age.	Time of sickness.	Died.	Cost of sickness.	Loss per month of those who died.
1	Willie Jones,	9 years,	5 weeks,		$35 36	
2	Mary Jones,	42 "	3 "		6 00	
3	Harry Muehler,	42 "	7 "	May 28, '85,	50 00	
4	Abia Darr,	19 "	10 "		10 00	
5	David Powell,	12 "	7 "		10 00	
6	Lizzie W. Morgans,	26 "	3 "	May 14, '85,	25 00	
7	John B. Powell,	20 "	4 "		10 00	
8	Elizabeth Kosty,	45 "	12 "		75 00	
9	Mary Ida Kosty,	4 "	11 "		40 00	
10	Kate Martin,	12 "	9 "		40 00	
11	Josie Martin,	8 "	7 "		35 00	
12	Lizzie Altamari,	6 "	3 "		35 00	
13	George Altamari,	4 "	10 "		35 00	
14	Maggie E. Jones,	26 "	13 "		70 00	
15	John E. Jones,	4 "	6 "		20 00	
16	John J. Evans,	22 "	3 "		20 00	
17	Evan E. Jones,	31 "	5 "		60 00	
18	Adalina Harris,	24 "	3 "		35 00	
19	Calvin Wilcox,	24 "	6 "	May 30, '85,	38 00	
20	Frank Williams,	25 "	13 "		60 00	
21	Marvin Kenshaw,	18 "	10 "			
22	Charles Irvin Kenshaw,	14 "	9 "			
23	Owen Jones,	5 "	10 "		50 00	
24	Josiah F. Spry,	22 "	7 "		45 00	
25	Jennie K. Spry,	10 "	8 "		30 00	
26	Leah Powell,	15 "	6 "			
27	Joseph B. Thomas,	27 "	12 "		15 00	
28	Daniel W. Richards,	28 "	9 "		50 00	
29	Ellen Jones,	15 "	7 "		75 00	
30	Maggie Jones,	18 "	7 "		75 00	
31	William R. Jones,	26 "	2 "	Aug. 4, '85,	95 00	
32	William W. Spry,	14 "	12 "		159 00	
33	Earl Spry,	1 "	3 "		25 00	
34	Mrs. D. K. Spry,	37 "	5 "		145 00	
35	Frank E. Spry,	9 "	3 "		55 00	
36	Lizzie Evans,	40 "	10 "		50 00	
37	Gertrude Evans,	20 "	9 "		50 00	
38	Josiah Jones,	22 "	9 "		50 00	
39	Edward Jones,	15 "	9 "		35 00	
40	Mary Jane Jones,	17 "	4 "		10 00	
41	David Price,	42 "	4 "		50 00	
42	John Ressa Price,	19 "	4 "		35 00	
43	Grace Evans,	21 "	9 "		26 00	
44	Delia Case,	14 "	3 "		40 00	
45	Arthur Case,	6 "	2 "		30 00	
46	Blannet Case,	5 "	6 "		40 00	
47	Harry Jones,	26 "	3 "		20 00	
48	Amy Jones,	11 "	7 "		63 00	
49	William H. Morgan,	22 "	2 "	May 10, '85,	80 00	
50	John F. Jones,	18 "	7 "		42 00	
51	William O. Jones,	35 "	2 "		20 00	
52	David J. Evans,	35 "	8 "	June 3, '85,	100 00	$120 00
53	David P. Lewis,	7 "	7 "		28 00	
54	John T. Lewis,	28 "	11 "		95 00	
55	Kate Lewis,	4 "	11 "		40 00	
56	Mary Ann Lewis,	28 "	1 "		5 00	
57	Harriet Williams,	6 "	9 "		25 00	
58	William W. Morgan,	45 "	1 "	Apr. 29, '85,	25 00	200 00
59	Luther Morgan,	13 "	2 "		15 00	
60	Ash. Rood,	54 "	3 "	May —,	8 00	
61	Miss Rood,	20 "	10 "			

TABULAR STATEMENT, ETC.—Continued.

Fifth Ward—*Continued.*

Number.	NAME.	Age.	Time of sickness.	Died.	Cost of sickness.	Loss per month of those who died.
62	Joshua D. Williams,	23 years,	9 weeks,		$157 00	
63	William L. Jones,	29 "	6 "		40 00	
64	Frank E. Thomas,	25 "	7 "		30 00	
65	Annie Thomas.	24 "	5 "		25 00	
66	John F. Thomas,	4 "	5 "		10 00	
67	Maggie Williams,	13 "	7 "		45 00	
68	Nathan Wolfe,	59 "	4 "	Apr. 23, '85,	50 00	$100 00
69	Sadie Wolfe,	13 "	3 "		25 00	
70	Thomas Thomas,	10 "	4 mos.,		75 00	
71	William Evans,	13 "	3 "		50 00	
72	Lizzie Williams,	22 "	4 "		43 00	
73	David J. Davis,	28 "	1 "		15 00	
74	Maud Williams,	6 "	1 "		30 00	
75	Charles David Johns,	4 "	2 "		30 00	
76	David D. Davis,	39 "	2 "		55 00	
77	Mrs. Mary R. Williams,	51 "	4 "		100 00	
78	Maggie R. Williams,	21 "	1 "			
79	William R. Bevan,	50 "	2 weeks,	May —,	61 00	40 00
80	Daniel John Bevan,	13 "	7 "		6 00	
81	Henry Mills,	14 "	2 mos.,		70 00	
82	Mary Mills,	12 "	3 weeks,			
83	James Mills,	9 "	10 "			
84	Thomas Mills,	2 "	10 "			
85	Thomas J. Evans,	22 "	9 "		75 00	
86	Mrs. Mary A. Evans,	21 "	7 "		75 00	
87	Mrs. Nora Wylie,	24 "	2 mos.,		145 00	
88	Charles Wylie,	25 "	3 "			
89	Miriam Richards,	14 "	2 weeks,		72 00	
90	Mary Lizzie Jones,	21 "	3 mos.,		190 00	
91	Maggie I. Jones,	19 "	2 "	May 27, '85.		
92	David D. Evans,	31 "	5 "		275 00	
93	William John Davis,	10 "	3 "		38 00	
94	Bessie Davis,	4 "	3 "			
95	Ada Thomas,	10 "	1 "		24 00	
96	Daniel James,	27 "	1 "	May 1, '85,	143 00	40 00
97	Thomas E. Edwards,	11 "	2 "		61 00	
98	William Edwards,	9 "	4 "		35 00	
99	Lizzie Price,	19 "	1 "		30 00	
100	Lizzie Anthony,	13 "	1 "		27 00	
101	Abbie Roberts,	5 "	2 "			
102	David J. Morgan,	18 "	3 "		76 00	
103	Minnie Jones,	14 "	2 "		64 00	
104	Kate E. Jones,	20 "	2 "			
105	Clara Nesbitt,	2 "	2 "		20 00	
106	Lewis Davis,	4 "	2 "		25 00	
107	William R. Richards,	32 "	2 "		40 00	
108	Mary Jane James,	18 "	2 "		30 00	
109	William W. Thomas,	42 "	3 "		114 00	
110	Mary Thomas,	51 "	3 "		2 00	
111	James Thomas,	36 "	3 "		150 00	
112	Mrs. Mary Thomas,	32 "	3 weeks,			
113	Jane Ann Thomas,	11 "	2 mos.,			
114	Margaret Thomas,	9 "	2 "			
115	Willie Thomas,	6 "	5 weeks,			
116	Ivor Thomas,	4 "	2 mos ,			
117	James Thomas,	1½ "	5 weeks,			
118	Maggie Jones,	18 "	2 mos.,		119 00	
119	Ettie Jones,	13 "	1 "			
120	William Jones,	9 "	2 "			
121	Mrs. Phebe Milward,	60 "	6 weeks,		16 00	

TABULAR STATEMENT, ETC.—Continued.

Fifth Ward—*Continued.*

Number.	Name.	Age.	Time of sickness.	Died.	Cost of sickness.	Loss per month of those who died.
122	Mrs. Sarah M. Major,	46 years,	1 month	May 27, '85,		
123	Marshal E. Major,	20 "	1 "		$95 00	
124	Annie L. Major,	16 "	3 weeks,			
125	R. A. Phillips,	21 "	2 mos.,		118 00	
126	Maggie H. Williams,	14 "	6 weeks,		50 00	
127	Daniel Everts,	20 "	7 "	June 5, '85,		
128	Peter Everts,	14 "	9 "		95 00	
129	Lizzie Isaac,	24 "	1 month		5 00	
130	Annie May Richards,	10 "	3 weeks,			
131	Keziah Richards,	8 "	4 mos.,		100 00	
132	Daniel Gardner,	81 "	5 "		100 00	
133	M. R. Morgans,	37 "	2 "			
134	Mrs. M. R. Morgans,	30 "	2 "			
135	Annie Morgans,	11 "	5 weeks,		200 00	
136	Nettie Roberts,	25 "	3 "			
137	Petty Davis,	12 "	6 "			
138	Gertrude Davis,	8 "	3 mos.,		100 00	
139	Mrs. Mary Edwards,	26 "	4 "		103 00	
140	George Picton,	6 "	2 "			
141	John Picton,	11 "	6 weeks,		140 00	
142	Sarah May Picton,	12 "	7 "			
143	Evan P. Evans,	24 "	1 month		20 00	
144	Hattie S. Madden,	30 "	6 "		100 00	
145	Mrs. Jane Evans,	31 "	9 weeks,		32 00	
146	Mrs. Jane Jones,	40 "	4 mos.,			
147	Daniel T. Jones,	10 "	2 "		125 00	
148	Lucy Jones,	5 "	1 "			
149	Emanuel Krothe,	30 "	1 "	May 12, '85,	53 00	$35 00
150	J. W. Chamberlin,	46 "	3 "			
151	George Chamberlin,	20 "	3 "		200 00	
152	J. C. Chamberlin,	16 "	3 "			
153	Charles Stair,	28 "	1 "	Died,	50 00	40 00
154	Mrs. Charles Stair,	24 "	4 "	"	70 00	
155	J. M. Renshaw,	18 "	2 "		100 00	
156	Charles Renshaw,	14 "	2 "			
				18	$7,239 36	$575 00

Sixth Ward.

1	William H. Walker,	14 years,	4 wks.,		$60 00	
2	Lannie B. Walker,	6 "	2 "		10 00	
3	Merrit Frederick,	43 "	3 m'ths,		90 00	
4	Miller Frederick,	18 "	4 "		75 00	
5	Daniel Frederick,	22 "	4 "		100 00	
6	Gertrude Frederick,	9 "	3 wks.,		25 00	
7	Bessie Calvin,	11 "	10 "		75 00	
8	Max. Calvin,	7 "	5 "		45 00	
9	William E. Jones,	49 "	6 "		30 00	
10	William W. Jones,	25 "	6 "		30 00	
11	Mary H. Jones,	18 "	10 "		50 00	
12	David Jones,	16 "	2 m'ths,		40 00	
13	Catharine A. Jones,	14 "	13 wks.,		60 00	
14	Frank Snyder,	51 "	4 m'ths,		150 00	
15	Emanuel M. Snyder,	22 "	3 wks.,	Died,	100 00	$30 00
16	Carrie E. Snyder,	20 "	9 days,	Died,	100 00	
17	William Snyder,	25 "	3 wks.,		20 00	
18	Mary Morgans,	17 "	5 m'ths,		100 00	

TABULAR STATEMENT, ETC.—Continued.

Sixth Ward—*Continued.*

Number.	Name.	Age.	Time of sickness.	Died.	Cost of sickness.	Loss per month of those who died.
19	Josie Burwick,	23 years,	8 wks.,		$50 00	
20	George Weiteck,	21 "	3 "		15 00	
21	Joseph Price,	15 "	3 m'ths,		60 00	
22	Eva G. Lowe,	12 "	7 wks.,		40 00	
23	Emma H. Lowe,	3 "	7 "		25 00	
24	John Henry Lowe,	10 "	3 "		12 00	
25	William Pickett,	35 "	7 "		90 00	
26	Edward Pickett,	13 "	2 m'ths,		65 00	
27	George W. Lewis,	32 "	2 "		95 00	
28	Martha Reynolds,	12 "	2 "		65 00	
29	Samuel Reynolds,	6 "	2 "		50 00	
30	William Nafus,	31 "	3 "		95 00	
31	Thomas Farrel,	11 "	4 "		90 00	
32	William J. Evans,	17 "	2 "		70 00	
33	Louisa Evans,	13 "	2 "		50 00	
34	Henry Lumley,	9 "	2 "		45 00	
35	Ann Lumley,	13 "	3 wks.,		15 00	
36	Reese Lumley,	15 "	4 "		20 00	
37	Margaret Lumley,	11 "	4 "		15 00	
38	Bertha Martin,	2 "	7 "		15 00	
39	William B. James,	24 "	3 m'ths,		90 00	
40	Margaret Morgans,	15 "	7 wks.,		60 00	
41	Annie S. Outten,	18 "	4 "	May 3,'85	200 00	
42	Miss H. A. Outten,	10 "	6 "		150 00	
43	Angelo Hendershot,	37 "	7 "		70 00	
44	Irvin Hendershot,	12 "	8 "		45 00	
45	Allie Lewis,	20 "	4 "		20 00	
46	Keturah Moss,	11 "	3 m'ths,		70 00	
47	Ira B. Wolfe	12 "	7 wks.,		30 00	
48	Emma D. Creveling,	17 "	6 "		30 00	
49	Felix Dougherty,	22 "	4 m'ths		80 00	
50	John Dougherty,	19 "	4 "		65 00	
51	Maggie Dougherty,	16 "	4 "		50 00	
52	Charles H. Cary,	26 "	14 wks.,		70 00	
53	Mary A. Cary,	25 "	9 "		55 00	
54	Stella Rickard,	13 "	8 "		75 00	
55	Nelvin Yost,	27 "	7 "			
56	John C. Yost,	22 "	3 "	May 3,'85		
57	Fannie Knight,	24 "	4 "			
58	Monroe Rood,	10 "				
59	Joseph Turner,	14 "	7 "			
60	Edward B. Walker,	24 "	4 "		60 00	
61	William John Morgan,	7 "	2 m'ths,		50 00	
62	William H. Hughes,	18 "	4 wks.,		30 00	
63	Charles H. Hughes,	13 "	4 m'ths,		95 00	
64	Harriet S. Thomas,	51 "	6 wks.,		50 00	
65	Frances Young,	63 "	6 "		40 00	
66	Paulina Young,	26 "	2 m'ths,		45 00	
67	Alexander Jacobs,	16 "	3 "		50 00	
68	Marx Jacobs,	12 "	5 "		90 00	
69	Jacob Baltimore,	20 "	3 "		60 00	
70	Eliza Jane Morgan,	14 "	3 wks.,		15 00	
71	Elizabeth Morgan,	47 "	6 "		45 00	
72	Annie Conner,	12 "	6 "		30 00	
73	Flora Conner,	10 "	3 "		15 00	
74	Joseph Conner,	8 "	2 "		10 00	
75	Harvey Yeager,	38 "	4 m'ths,		500 00	
76	Hannah Yeager,	24 "	3 "		75 00	
77	Grace Davis,	7 "	6 wks.,		50 00	
78	Henry Gabriel,	37 "	5 m'ths,		200 00	
79	E. A. Outen,	47 "	2 "		15 00	

TABULAR STATEMENT, ETC.—Continued.

Sixth Ward—*Continued.*

Number.	Name.	Age.	Time of sickness.	Died.	Cost of sickness.	Loss per month of those who died.
80	G. V. Outen,	42 years,	18 wks.,		$300 00	
81	Elizabeth Evans,	16 "	4 m'ths,		225 00	
82	Sarah Jane Evans,	13 "	5 wks.,	Died,	175 00	
83	Gwennie Evans,	16 "	7 "		25 00	
84	Johanna Reese,	21 "	5 "	Died,	90 00	$34 96
85	William Reese,	18 "	9 "		57 00	
86	Keziah Reese,	5 "	2 "		10 00	
87	Mary Jane Reese,	16 "	3 "		15 00	
88	Charlotte Reese,	44 "	5 "		20 00	
89	William Woods	16 "	5 m'ths,		100 00	
90	James R. Richards,	19 "	4 "		80 00	
91	Thomas Watkins,	21 "	3 "		60 00	
92	Robert Watkins,	13 "	6 wks.,		25 00	
93	William Watkins,	11 "	4 "		15 00	
94	Ann Watkins,	48 "	8 "		70 00	
95	Benjamin Lewis,	18 "	3 m'ths,	Died,	95 00	30 00
96	David Lewis,	19 "	4 "		80 00	
97	Mary Lewis,	50 "	3 wks.,		20 00	
98	Mary Ann Rickets,	23 "	6 "		75 00	
99	Mary Carney,	12 "	3 m'ths,		90 00	
100	Bridget Carney,	35 "	3 "		100 00	
101	John Jurisin,	23 "	2 "		40 00	
102	John Roarke,	14 "	8 wks.,		30 00	
103	Mary E. Roarke,	7 "	8 "		30 00	
104	William R. Jones,	20 "	3 m'ths,		75 00	
105	John E. Jones,	18 "	3 "		80 00	
106	Ann E. Jones,	22 "	3 wks.,		15 00	
107	May B. Smith,	23 "	6 "		100 00	
				7	$7,079 00	$94 96

Seventh Ward.

1	George Woods,	22 years,	8 weeks,		$125 00	
2	Harvey Miller,	23 "	4 "		40 00	
3	John Myers,	23 "	10 "		140 00	
4	Mrs. Myers,	22 "	3 "			
5	Wayman Nofins,	25 "	5 "	Died,	100 00	$35 00
6	Neal Nofins,	38 "	6 "		200 00	
7	Ida Nofins,	13 "	5 "			
8	Annie Nofins,	11 "	5 "			
9	Neal Laird	38 "	6 "		80 00	
10	Charles Cooper,	18 "	5 "		50 00	
11	George Jackwish,	42 "	3 "		35 00	
12	Mrs. Dolan,	32 "	5 "		15 00	
13	Mrs. Albrighton,	48 "	3 "		40 00	
14	Hiram Miles,	60 "	3 "		40 00	
15	Henry Lewis,	16 "	12 "		190 00	
16	Mask Lewis,	11 "	4 "			
17	Laura Lewis,	17 "	4 "			
18	Call Hummell,	19 "	5 "		70 00	
19	Nellie Hinnott,	5 "	4 "		25 00	
20	George Davenport,	16 "	4 "		40 00	
21	James Lewis,	16 "	12 "		225 00	
22	Evan Lewis,	15 "	12 "			
23	Maggie Lewis,	13 "	1 "	Died,		
24	David Lewis,	8 "	4 "			
25	Lizzie Lewis,	11 "	4 "			

TABULAR STATEMENT, ETC.—Continued.

Seventh Ward—*Continued.*

Number.	NAME.	Age.	Time of sickness.	Died.	Cost of sickness.	Loss per month of those who died.
26	John Burke,	15 years,	5 weeks,		$100 00	
27	Edward Burke,	13 "	5 "			
28	Joseph Burke,	9 "	4 "			
29	Robert Hower,	20 "	2 "	Died,	25 00	$35 00
30	Alvina Stiff,	12 "	1 "	Died,	20 00	
31	George Stiff,	15 "	2 "		10 00	
32	Clark Wolfe,	18 "	9 "		80 00	20 00
33	John Kelly,	8 "	5 "		40 00	10 00
34	Mary Morris,	31 "	4 "		30 00	
35	Asa DeWitt,	30 "	8 "		50 00	
36	Catherine Morgan,	5 "	1 "	Died,	15 00	
37	Mary Morgan,	30 "	4 "		20 00	
38	Mrs. Affleck,	42 "	4 "	Died,	100 00	
39	James McGuire,	8 "	3 "		30 00	
40	James Connell,	39 "	1 "			
41	Mary Connell,	5 "	3 "		50 00	
42	Margaret Connell,	36 "	3 "			
43	Phil Connell,	8 "	3 "			
44	William Edwards,	21 "	9 "		100 00	
45	John Edwards,	7 "	5 "			
46	William Jones,	6 "	5 "		40 00	
47	Samuel Eddey,	22 "	5 "		60 00	
48	Liva Whitman,	28 "	9 "		60 00	
49	William Affleck,	39 "	3 "	Died,	50 00	
50	Jane Cooper,	34 "	4 "		20 00	
51	Elizabeth Jenkins,	18 "	8 "		70 00	
52	William Morgan,	38 "	4 "		40 00	
53	John Colbert,	8 "	3 "		35 00	
54	Mary Colbert,	6 "	3 "			
55	Mary Ragan,	13 "	4 "		40 00	
56	May Thomas,	15 "	5 "		40 00	
57	Edith Griffith,	13 "	6 "		40 00	
58	Phil Flick,	21 "	4 "		20 00	
59	Mary Trebilcox,	5 "	6 "		50 00	
				7	$2,650 00	$100 00

Eighth Ward.

1	Carrie Woods,	1 year,	16 weeks,	Died,		
2	Lizzie Woods,	4 "	9 "		$150 00	
3	Emma Woods,	2 "	6 "			
4	Alice Hunlock,	11 "	5 "		25 00	
5	Mary Brennan,	31 "	6 "		40 00	
6	James Brennan,	23 "	8 "			
7	Sarah Davis,	7 "	3 "		10 00	
8	Frank Lewis,	15 "	11 "			
9	Albert Lewis,	13 "	11 "		70 00	
10	Sadie Lewis,	11 "	11 "			
11	John Montjoy,	13 "	14 "		80 00	
12	Morgan Roberts,	10 "	6 "		20 00	
13	Emma Epps,	11 "	3 "		20 00	
14	William Epps,	14 "				
15	Frank Williams,	20 "	12 "		100 00	
16	Phelvida Lowe,	55 "	8 "		50 00	
17	Carrie Bilke,	21 "	9 "		50 00	
18	Mary Hoover,	24 "	17 "	Died,	300 00	
19	James Daniels,	21 "	8 "			

TABULAR STATEMENT, ETC.—Continued.

Eighth Ward—*Continued.*

Number.	Name.	Age.	Time of sickness.	Died.	Cost of sickness.	Loss per month of those who died.
20	Patrick Dougherty,	63 years,	7 weeks,		$100 00	
21	James Dougherty,	19 "	8 "			
22	Stanley Davenport,	24 "	6 "		150 00	
23	Andrew Davenport,	22 "	6 "			
24	Ward Davenport,	15 "	4 "			
25	Loyd Davenport,	4 "	4 "			
26	Oliver Davenport,	22 "	6 "		30 00	
27	Frank McDermott,	22 "	10 "		75 00	
28	Peter McDermott,	20 "	8 "			
29	Ai Knapp,	14 "	4 "		30 00	
30	Harry Knapp,	12 "	3 "			
31	Ella Cunningham,	16 "	4 "		12 00	
32	Thomas Brennan,	17 "	17 "		125 00	
33	Milton Fine,	20 "	3 "		30 00	
34	Harry Wolfe,	12 "	6 "		20 00	
35	Harvey Zimmerman,	17 "	8 "		35 00	
36	Simon Reynolds,	69 "	10 "		20 00	
37	Milton Boyer,	23 "	5 "	Died,	110 00	$100 00
38	Hattie Boyer,	10 "	5 "		25 00	
39	William Massaker,	11 "	4 "		5 00	
40	George Roberts,	6 "	6 "		25 00	
41	Lottie Shellhamer,	19 "	7 "		100 00	
42	Eussy Shellhamer,	13 "	7 "			
43	Carrie Schartzer,	13 "	2 "		15 00	
44	Thomas Brice,	50 "	18 "		150 00	
45	Albert Stublebine,	12 "	6 "		25 00	
46	Clara Slocum,	13 "	15 "		10 00	
47	Connor Thoo,	23 "	12 "		150 00	
48	Johanna Broderick,	6 "	6 "		30 00	
49	Kate Gabriel,	64 "	11 "		25 00	
50	James Jones,	11 "	5 "		87 00	
51	Michael Reddington,	19 "	10 "		25 00	
52	William Dingle,	38 "	10 "		100 00	
53	French Sammis,	56 "	15 "		30 00	
54	Henry Sammis,	17 "	4 "			
55	Dough Sheaffer,	17 "	13 "		100 00	
56	Michael Dempsey,	28 "	3 "	Died,	100 00	30 00
57	Cassy McNailes,	13 "	5 "		30 00	
58	Thomas Edwards,	20 "	4 "		15 00	
59	Jim Stublebine,	14 "	5 "		25 00	
60	Kate Nore,	74 "	5 "		25 00	
61	Mrs. George Oats,	24 "	8 "		40 00	
62	Kate Dougherty,	18 "	8 "		50 00	
63	Mary Mumford,	7 "	15 "		15 00	
				4	$2,754 00	$130 00

Turkey Hill District.

1	Mary Leach,	17 years,	4 weeks,	Died.		
2	Mary Brown,	6 "	7 "		$30 00	
3	Lizzie Roscolon,	7 "	12 "		45 00	
4	William Gustet,	14 "	12 "		50 00	
5	William Tedde,	9 "	3 "	Died,	55 00	
6	Mary Tedde,	14 "	4 "		9 00	
7	Lora Morgan,	7 "	5 "			
8	Ida Morgan,	10 "	5 "			
9	Harry Morgan,	14 "	8 "		175 00	
10	Ecley Morgan,	19 "	10 "			
11	Phillip Morgan,	17 "	3 "			

TABULAR STATEMENT, ETC.—Continued.

Turkey Hill District—*Continued.*

Number.	NAME.	Age.	Time of sickness.	Died.	Cost of sickness.	Loss per month of those who died.
12	Jane Griffith,	22 years,	2 weeks,		$47 00	
13	George Griffith,	20 "	6 "			
14	David Lake,	12 "	7 "			
15	Sarah Lake,	8 "	6 "			
16	Maggie Lake,	11 "	9 "			
17	Esther Lake,	7 "	13 "		175 00	
18	Mary Lake,	13 "	13 "			
19	Lemuel Lake,	4 "	6 "			
20	Lizzie Lake,	6 "	6 "			
21	John Jones,	19 "	4 "	Died,	80 00	$30 00
22	David Johns,	9 "	3 "		18 00	
23	Mary Leech,	17 "	6 "	Died,	40 00	
24	Mary Brown,	25 "	2 "		10 00	
25	Edith Phillips,	7 "	4 "			
26	Mary Rodgers,	27 "	7 "		60 00	
27	William Elis,	14 "	12 "		50 00	
28	John Clark.					
29	Mathew Clark.					
30	Alice Clark.					
31	Becca Clark.					
32	William Phillips,	17 "	17 "		45 00	
33	Henry Harris,	19 "	12 "			
34	Elizabeth Harris,	11 "	3 "	Died,	150 00	18 00
35	William Harris,					
36	Sarah Davis,	9 "	5 "			
37	Robert Young,	22 "	8 "		18 00	
38	Thomas Thomas,	29 "	4 months,		300 00	
39	Hugh Jones,	37 "	6 weeks,	May 19,	75 00	50 00
40	Catherine Jones,	43 "	7 "		85 00	
41	Ellen Owens,	21 "	8 "		80 00	
42	John Bowen,	15 "	8 "		75 00	
43	William Bowen,	45 "	7 "		85 00	
44	William Thomas,	55 "	9 "		40 00	
45	Jerome Lewis,	18 "	14 "			
46	Susan Lewis,	16 "	14 "		80 00	
47	Liva Lewis,	11 "	10 "			
48	William Jones,	22 "	14 "		25 00	
49	Eugene Edwards,	17 "	9 "		45 00	
50	John Massaker,	43 "	9 "		95 00	
51	Emma Massaker,	17 "	9 "			
52	Lizzie Renne,	18 "	6 "		60 00	
53	Isaac M. Eddy,	21 "	7 "		45 00	
54	Dora Shaver,	16 "	11 "		50 00	
55	Frank Dempsey,	17 "	13 "		75 00	
56	Richard Lewis,	33 "	2 "		15 00	
57	Ellen Eagen,	20 "	7 "		35 00	
58	Lazarus Hughes,	13 "	9 "			
59	Liva Hughes,	9 "	8 "		90 00	
60	Stone William,	17 "	10 "		65 00	
61	Wm. Mitchell, (child,)	2 "	3 "		15 00	
62	Edward McEnley,	7 "	2 "		10 00	
63	Maggie Brislin,	20 "	5 "		30 00	
64	John Brown,	40 "	5 "		15 00	
65	Ambrose Brown,	30 "	2 "	June 25,		40 00
66	John Griffith,	23 "	14 "		48 00	
67	David Richards,	21 "	14 "		10 50	
68	Mary Owens,	35 "	5 "	June 16,	75 00	
69	Lizzie Owens,	12 "	8 "		25 00	
70	William Nead,	49 "	5 "		29 00	
71	John Price,	16 "	7 "		37 00	

TABULAR STATEMENT, ETC.—Continued.

Turkey Hill District—*Continued.*

Number.	Name.	Age.	Time of sickness.	Died.	Cost of sickness.	Loss per month of those who died.
72	Evan Jones,	27 years,	10 weeks,	June 26,	$125 00	$50 00
73	Isaac James,	28 "	7 "		80 00	
74	Elizabeth James,	14 "	5 "			
75	John James,	6 "	9 "		20 00	
76	James James,	12 "	3 "			
77	William Brennan,	19 "	17 "		100 00	
78	Freman Brennan,	16 "	8 "			
79	Meldard Brennan,	14 "	10 "			
80	Thomas Sims,	27 "	7 "	May 6,	55 00	50 00
81	Lizzie Sims,	7 "	5 "			
82	Robert Young,	20 "	4 "			
				10	$3,171 50	$238 00

Township, Second District, East Division.

1	George Beacham,	31 years,	13 weeks,		$80 00	
2	A. L. Shaffer,	31 "	14 "		25 00	
3	Alice Shaffer,	2 "	6 "		15 00	
4	Cora Shaffer,	4 "	6 "		15 00	
5	Edward Gallagher,	27 "	4 "		23 00	
6	Mrs. Edward Gallagher,	27 "	6 "		21 00	
7	Mrs. W. Anderson,	24 "	13 "		30 00	
8	Lane Davis,	37 "	13 "		55 00	
9	Charles Dougherty,	12 "	10 "		35 00	
10	William Fenwick,	13 "	11 "		30 00	
11	Richard Maher,	17 "	10 "		55 00	
12	Henry Jenkins,	30 "	7 "		40 00	
13	Celia McGuire,	19 "	10 "		55 00	
14	Sarah Berry,	9 "	7 "		25 00	
15	Mary McLaughlin,	16 "	8 "		45 00	
16	Mary Gibbons,	13 "	12 "		40 00	
17	James Duffy,	6 "	12 "		35 00	
18	Julia Collins,	18 "	7 "		35 00	
19	Maggie Collins,	15 "	7 "		35 00	
20	Fred Vivian,	6 "	7 "		25 00	
21	Gertrude Vivian,	2 "	2 "	Died,	20 00	
22	Annie Fleming,	14 "	6 "		50 00	
23	Thomas Collins,	36 "	7 "		40 00	
24	Thomas Davis,	21 "	11 "		15 00	
25	Thomas Golightley,	73 "	20 "	Died,	225 00	
26	Mrs. Charles Boyle,	22 "	11 "		45 00	
27	John Reed,	14 "	13 "		75 00	
28	Ann Downs,	17 "	14 "			
29	Martha Downs,	14 "	6 "		185 00	
30	Albert Downs,	2 "	8 "			
31	Jane Downs,	57 "	5 "			
32	Richard Worthington,	44 "	17 "		80 00	
33	David Parry,	43 "	2 "		15 00	
34	Mary Gill,	8 "	8 "		40 00	
35	Martha Peyton,	3 "	4 "		60 00	
36	Kate Peyton,	10 "	4 "			
37	Elizabeth Constable,	10 "	4 "		25 00	
38	Henry Pickering,	24 "	7 "		75 00	
39	Ellen Charlton,	17 "	8 "		45 00	
40	Mary Fenwick,	13 "	5 "		27 00	
41	Susie Shaffer,	6 "	8 "			
42	Alfred Shaffer,	9 "	3 "			
43	Ann Barry,	19 "	3 "	Died,	85 00	

TABULAR STATEMENT, ETC.—Continued.

Township, Second District, East Division—*Continued.*

Number.	Name.	Age.	Time of sickness.	Died.	Cost of sickness.	Loss per month of those who died.
44	Oscar Lance, jr.,	11 years,	8 weeks,		$100 00	
45	John Lance,	9 "	5 "			
46	Elizabeth Lance,	7 "	5 "			
47	John Van Buskirk,	27 "	3 "		20 00	
48	Joseph McLaughlin,	12 "	8 "		25 00	
49	Samuel Culloway,	24 "	5 "		30 00	
				3	$2,016 00	

Welsh Hill District.

1	Mrs. Dennis Mullin,	35 years,	7 weeks,		$60 00	
2	Bridget Ryan,	26 "	3 "	Died,	81 60	$9 00
3	Norah Ryan,	7 "	5 "		21 00	
4	Elizabeth Scott,	17 "	5 "	Died,	85 00	12 00
5	William Scott,	21 "	4 "		43 00	
6	Ellen Bryan,	16 "	7 "		43 00	
7	L. Gregory,	24 "	9 "		70 00	
8	Margaret Hallahan,	17 "	5 "		46 00	
9	William Barney,	16 "	5 "	Died,	60 00	20 00
10	Henry Barney,	26 "	12 "		61 00	
11	Margaret Lynch,	19 "	9 "		60 00	
12	Phillip Maher,	16 "	2 "	Died,	100 00	31 00
13	Michael Keating,	11 "	4 "		30 00	
14	Daniel McCormick,	28 "	3 "	Died.		
15	Cap Noliskie,	14 "	5 "		30 00	
16	John Staus,	12 "	12 "		20 00	
17	Harry Longmore,	20 "	12 "		219 11	
18	Elizabeth Longmore,	20 "	8 "			
19	Susanna Hackett,	45 "	8 "		40 00	
20	Robert Monahan,	14 "	6 "		30 00	
				5	$1,099 71	$72 00

TABULAR STATEMENT, ETC.—Continued.

Recapitulation.

Number.		Died.	Cost of sickness.	Loss per month of those who died.	How much loss of earnings during sickness.
138	First ward,	14	$5,094 00	$39 00	$3,401 00
67	Second ward,	7	1,466 35		1,058 00
227	Third ward,	17	14,511 25		6,694 00
134	Fourth ward,	20	12,019 00	286 00	1,852 00
156	Fifth ward,	20	7,239 36	575 00	4,476 00
157	Sixth ward,	7	7,079 00	94 96	3,919 58
60	Seventh ward,	7	2,650 00	100 00	1,433 00
63	Eighth ward,	4	2,754 00	130 00	2,533 00
82	Turkey Hill district,	10	3,171 50	238 00	3,372 50
49	Township Second district, East division,	3	2,016 00		1,159 00
20	Welsh Hill district,	5	1,099 71	72 00	122 00
1,153		114	$59,100 17	$1,534 96	$30,020 08
	Hospital, (about,)		8,000 00		
			$67,100 17		
	Cost,			$67,100 17	
	Loss earnings,			30,020 08	
	Total,			$97,120 25	

REPORT ON CASES OF SMALL-POX AT SPRING MILL, MONTGOMERY COUNTY, WITH MEASURES TAKEN TO PREVENT AN EPIDEMIC.

On the second day of September the following communication was received by the Secretary:

HEALTH OFFICE,
S. W. CORNER OF SIXTH AND SANSOM STREETS,
PHILADELPHIA, *September 1, 1885.*

To the President and Members of the State Board of Health:

GENTLEMEN: I am directed by the board of health to transmit to you the following copy of resolution passed this date.

Respectfully yours,

WILLIAM P. TROTH,
Chief Clerk.

Resolved, That a copy of the report of the Medical Inspector relative to cases of small-pox at Spring Mill, Montgomery county, Pennsylvania, be sent to the State Board of Health.

OFFICE OF THE BOARD OF HEALTH,
S. W. CORNER SIXTH AND SANSOM STREETS,
PHILADELPHIA, *September 1, 1885.*

M. VEALE, Esq.,

Health Officer:

SIR: In company with Dr. Leffman, I visited the residence of Lemuel Tolen, at Spring Mill, Montgomery county, and found that he had recovered from small-pox, but that a younger member of the family, a female, is now very sick with the disease. The children in the house have been recently vaccinated, but there are many in the little settlement—all apparently poor—that should be examined and vaccinated if required. The first cases that occurred here, about three months ago, came from operatives in Hamilton's paper-mills, at Lafayette, and the disease has lingered here ever since, and is likely to continue if energetic measures are not resorted to. There is no doubt but that all these cases are directly due to infected rags at Hamilton's paper-mill, and such outbreaks will continue until some system of thorough disinfection is enforced. As this district is beyond the jurisdiction of the Board of Health, I would respectfully suggest that the matter be referred to the State Board of Health.

Respectfully submitted.

(Signed) J. HOWARD TAYLOR,
Medical Inspector.

Immediately upon the receipt of this information, I addressed a communication to the Philadelphia Board of Health, stating that the State Board

had not as yet completed its arrangements for meeting emergencies of this kind, and requesting them, in the interests of the public health and as a matter of precaution for the city of Philadelphia, to depute one of their vaccine physicians to vaccinate the community at Spring Mill, at the expense of the State Board. This request was promptly and courteously acceded to. The appended report of Dr. Sibbald, vaccine physician, indicates the number of successful vaccinations. Feeling desirous to have the origin of the disease established beyond all question, I addressed a note to Dr. J. Howard Taylor, medical inspector, asking him for his reasons in detail for attributing it to infected rags at the Lafayette paper-mills. The following is his reply:

Health Office, *September 10, 1885.*

Benjamin Lee, M. D.,

Secretary Pennsylvania State Board of Health:

Dear Sir: In reply to your communication of the 7th instant, requesting somewhat in detail the reasons which led me to attribute the cases of small-pox occurring at Spring Mill and vicinity to the rags in Hamilton's paper-mill," I have to state that when the cases were reported to this office, and I had been informed they were operatives in Hamilton's paper-mill, I called at the mill to verify this report, and found that all were employed in the dusting-room, where the rags are first taken to be cleaned. The inference was clear to my mind that the disease was contracted from working among infected rags.

There were six cases in all directly traceable to this infection. One operative lived at Spring Mill, and one at Conshohocken, both had the disease, and from the form of these cases the present sickness at Spring Mill has developed.

The last case reported died on the 8th instant. I have no information as to any pest cases.

Respectfully,

JNO. HOWARD TAYLOR,
Medical Inspector.

The following communication was received shortly after the notification from the city board of health:

Dr. Benjamin Lee,

Dear Sir: I am secretary of the board of directors of poor of Montgomery county, and am having some of the trouble with the small-pox cases at Spring Mill. One, Miss Mary Knight, died, and was buried yesterday, A. M., but others are living in the house in which she died, and it is difficult to get them to cleanse or fumigate the building. They are very poor and dissolute, and are not proper subjects for charity in that they do considerable carousing. The village of Spring Mill, in Whitemarsh township, is not incorporated, and, of course, has no board of health; I think, therefore, it would come under the jurisdiction of the State Board of Health, of which,

I believe, you are Secretary. I fear that if nothing is done small-pox will be prevalent there this fall and winter, and owing to its proximity to Conshohocken, and even to Philadelphia, if it gets a foothold, there is no saying where it will end. If you are desirous of seeing me in reference to the matter, I would be glad to call on you, or if you are in this vicinity you might call.

Yours truly,

DAVID H. ROSS.

In a personal interview with the writer of the above, I informed him of the steps which the Board had taken, and assured him that the Board would support him in any action which he and his neighbors would take, in order to destroy the infection.

In the course of three weeks, William B. Atkinson, M. D., of Philadelphia, having been appointed medical inspector to the Board, I instructed him to visit the infected neighborhood and inquire as to the present condition. The following is his report:

PHILADELPHIA, *October 2, 1885.*

BENJAMIN LEE, M. D.,

Secretary of State Board of Health of Pennsylvania:

DEAR SIR: In accordance with instructions from you, I visited the village of Spring Mill, in Whitemarsh township, Montgomery county, on October 1, 1885. I found that the last case of small-pox had been removed to the county hospital about two weeks previously. There had been some thirteen cases in all, of which one had died. The houses where the later cases had existed had been cleansed, disinfected, white-washed, or painted, and they now were regarded as being in a sanitary condition. The house from which the last case had been removed was tenanted by two men, one of whom had suffered from a severe attack of the disease in the early days of the present epidemic. I found that this house had been white-washed and disinfected, and that the incumbents were still using a variety of disinfectants very freely. (The floor and stair-case leading from the back room were covered—really piled—with bedding, old clothing, etc., laying loosely around, which was said to have been aired on a neighboring lot, and disinfected. I should regard this clothing as particularly liable to retain germs of the disease, and would recommend that it and the house be removed and destroyed. The house is a two-story frame of unprepossessing appearance, and I was informed could be bought at a very low price. I suggested that the neighbors who were most interested should contribute to a fund for its purchase, and thus obtain the right to destroy it as a disease-producer by cremation.)

I was unable to find any cases demanding vaccination, as a neighboring

physician had very recently performed that operation for all who were willing to have it done.

I next visited the Riverside paper-mill at Lafayette, one mile below, and was very pleasantly received by Messrs. Hamilton & Sons. They courteously summoned several of their employés, who assured me that no cases of small-pox had occurred among their number since April last. This firm employ a physician yearly to inspect and vaccinate all of their work people who may need it.

While examining the paper-mill and its valuable machinery, I regretted to find that there was no positive method by which the rags, both domestic and imported, could be completely disinfected.

All of which is respectfully submitted.

Your obedient servant,

WILLIAM B. ATKINSON, M. D.,
Special Medical Inspector.

REPORT OF J. SIBBALD, M. D., VACCINE PHYSICIAN.

OFFICE OF BENJAMIN LEE, M. D.,
SECRETARY STATE BOARD OF HEALTH,
313 SOUTH 15th STREET, PHILA.

J. Sibbald being duly sworn or affirmed, declares that he has successfully, in person, vaccinated each and every case named in the annexed report, dated October 1, 1885, and also, by personal examination, satisfied himself of the successful issue thereof.

J. SIBBALD, *Vaccine Physician, Sixteenth District.*

Sworn or affirmed before me, this second day of November, 1885.

HOMER PARSONS,
Notary Public.

REVACCINATIONS AT SPRING MILL.

NAME OF PATIENT.	AGE.	RESIDENCE.	OCCUPATION.
Ellen McDonald,	40 years.	Centre street,	Housekeeper.
John McDonald,	15 "	" "	Mill hand.
Ella McDonald,	9 "	" "	"
Mary McCannan,	20 "	" "	"
G. W. Katz,	36 "	" "	"
Bella Smith,	11 "	" "	"
Elbert Smith,	9 "	" "	"
Newton Smith,	38 "	" "	"
Kate Morris,	40 "	" "	"
Timothy Murray,	32 "	" "	"
William Neal,	40 "	" "	"
Bridget Divine,	29 "	" "	"
Maggie Divine,	4 "	" "	"
Mary Blake,	40 "	" "	"
Thomas Blake,	16 "	" "	"
Margaret Henry,	43 "	" "	"
David Henry,	7 "	" "	"
Lillie Sweeney,	10 "	" "	"

REVACCINATIONS AT SPRING MILL—Continued.

NAME OF PATIENT.	AGE.	RESIDENCE.	OCCUPATION.
Mary Smith,	12 years,	Near Hitner's,	Mill hand.
Katie Smith,	10 "	" "	"
Patrick Smith,	14 "	" "	"
Mary Kahoe,	18 "	Centre street,	"
Thomas Kahoe,	10 "	" "	"
Louisa Johnson,	27 "	" "	"
Alexander Johnson,	7 "	" "	"
Celia Gormley,	41 "	" "	"
Annie Gormley,	13 "	" "	"
Bridget Qualtis,	21 "	" "	"
Annie Butler,	10 "	" "	"
George Sheets,	19 "	Hector street,	Laborer.
Kate Comer,	49 "	Spring Mill avenue,	"
Sarah Comer,	14 "	" " "	"
Mary Nixon,	14 "	" " "	"
Eliza Ramsay,	42 "	" " "	"
Thomas Ramsay,	14 "	" " "	"
Lizzie Ramsay,	16 "	" " "	"

PHILADELPHIA, *October* 1, 1885.

J. SIBBALD, M. D.,
Wissahickon, Pa.

PRIMARY VACCINATIONS, SPRING MILL.

NAME OF PATIENT.	AGE.	RESIDENCE.	OCCUPATION.
Annie Breish,	3 years,	Hector street,	Laborer.
Katie Breish,	6 months,	" "	"
William O'Connor,	2 years,	" "	"
Daniel Redman,	1 "	Spring Mill road,	"
Lizzie Butler,	2 "	" " "	"
Mary McGetagien,	9 "	" " "	"
John McGetagien,	3 "	" " "	"
Robert McCannan,	12 "	Centre street,	Mill hand.
Florence Thomas,	3 "	" "	"
Mary Lentz,	20 "	" "	"
Estella Lentz,	6 months,	" "	"
Maria Neal,	7 "	" "	"
Charles Johnson,	4 "	" "	"
Thomas Cooney,	8 "	" "	"
James Cooney,	8 "	" "	"
Mary Deoreux,	3 "	" "	"
Annie Johnson,	5 "	" "	"
Martha Sheets,	29 "	Hector street,	"
Harvey Sheets,	5 "	" "	"
Lizzie Comer,	11 "	Spring Mill avenue,	Laborer.
Maggie White,	2 "	" " "	"
William Ramsay,	12 "	" " "	"
Robert Ramsay,	10 "	" " "	"
Sallie Ramsay,	8 "	" " "	"
James Ramsay,	6 "	" " "	"
Annie Comer,	9 "	" " "	"
Annie McDonald,	14 "	" " "	"
Sallie Nixon,	11 "	" " road,	"
Charles Nixon,	1 "	" " "	"

Total number of cases, sixty-five, of which twenty-nine were primary.

J. SIBBALD, M. D.,
Wissahickon, Pa.

PHILADELPHIA, *October* 1, 1885.

REPORT ON TYPHOID AND TYPHOID-MALARIAL FEVERS AT ROSEMONT, MONTGOMERY COUNTY, WITH ACTION OF BOARD IN ABATEMENT OF NUISANCES, AND PROSECUTION OF THE OFFENDER.

In the early part of the month of August, the Secretary was notified by the secretary of the board of health of Philadelphia of the existence of typhoid and typhoid-malarial fevers in the neighborhood of Rosemont and Bryn Mawr, on the line of the Pennsylvania railroad, in Montgomery county. At the same time he received the following complaints from respectable citizens residing either temporarily or permanently in the vicinity referred to:

Rosemont, Penna., *July 31, 1885.*

Benjamin Lee, M. D.,

Secretary of the State Board of Health:

Dear Sir: There is located on a small piece of ground on Montgomery avenue and Roberts road, Lower Merion township, Montgomery county, a man by name of Daniel Kerrigan, who has been endeavoring to make a nuisance to this neighborhood by retaining a large number of pigs in a most filthy condition, which is injurious to the health of this neighborhood. Should this come under your jurisdiction, would be pleased to hear from you.

Very respectfully yours,

CHARLES SIM.

Benjamin Lee, M. D.,

313 South Fifteenth Street, Philadelphia:

Dear Sir: Daniel Kerrigan, of Lower Merion township, near Rosemont, on Montgomery avenue, maintains a public nuisance. I am informed that you are the proper person to whom to make complaint, and I wish to enter a plea for the prompt abatement of the nuisance maintained by Daniel Kerrigan, as *malicious* in intent and extremely prejudicial to the public health. Prejudicial to the public health, as in an extremely small space he keeps a large number of hogs, cows, etc., and every wind that blows over his place is noisome, and filled with the odor of putrefaction; so much so that it has exercised a direct and perceptible effect upon the health of my family. Malicious in intent, as it is currently reported that he declares he intends to maintain this nuisance in such a way as to force his neighbors to purchase his strip of land for their own protection. Your prompt attention will much oblige,

Yours respectfully,

HARRY B. FRENCH,

of French, Richards & Co., 1001 Market street, Phila.

Rosemont, Pa., *August 1, 1885.*

PHILADELPHIA, *August 5, 1885.*

DR. BENJAMIN LEE,

Secretary State Board of Health:

DEAR SIR: A man named Daniel Kerrigan is maintaining a nuisance prejudicial to public health at corner of Montgomery avenue and Roberts road, Rosemont station, Pennsylvania railroad. There are no local health authorities that I can learn of in Lower Merion township, Montgomery county, Pennsylvania, and so I have been waiting the organization of the State Board of Health. He has constructed shanties of old boards, shingle roofs, &c., at road-side, containing himself, horses, and pigs; no drainage or water-closets, privies, &c., but, being in a hollow, everything stagnates, and is noisome and offensive to passers-by, as well as to neighbors. If the State Board of Health can reach this case, it will be a blessing. The wonder is the man himself has not died.

Respectfully yours,

F. K. HIPPLE.

I reside in Bryn Mawr, within five hundred feet of this place.

An inquiry addressed by the Secretary to Mr. French, one of the complainants, as to the existence of a local board of health, elicited the following reply:

PHILADELPHIA, *August 5, 1885.*

BENJAMIN LEE, M. D.,

Secretary State Board of Health, 313 South Fifteenth Street:

DEAR SIR: In reply to your esteemed favor of 3d instant, I have to say that, after diligent inquiry, I cannot find any trace of a local board having jurisdiction in Rosemont.

I remain, respectfully yours,

HARRY B. FRENCH.

A warning was at once sent to the offender, Daniel Kerrigan, instructing him to put his premises into good sanitary condition, and the post-master of the place was requested to insure its delivery. No attention was paid to this notice, as will appear from the following complaint, dated August 29th:

DEAR SIR: I reside at the corner of Montgomery avenue and Roberts road, Bryn Mawr, Pennsylvania. At the corner opposite is located a certain Daniel Kerrigan, whose place is a nuisance to the neighborhood. He uses it as a dumping-ground for refuse matter, and maintains a piggery, with its usual concomitants of decaying and strong-smelling animal and vegetable matter. Our family have, for some time, been more or less annoyed and incommoded in consequence. We have had to leave grounds and piazzas, and take refuge in-doors. On one or more occasions we were not safe from the stenches in-doors except with closed sashes, and this in July and August. The place is certainly a great discomfort to the imme-

diate neighbors, as well as to others having frequent occasion to pass it. In passing it the stenches are sometimes almost sickening. I don't doubt that it is a nuisance prejudicial to health, and properly coming under the notice of your board. I respectfully ask that steps be taken, if possible, to abate or *remove* the nuisance.

Respectfully yours,

STEPHEN O. FUGUET.

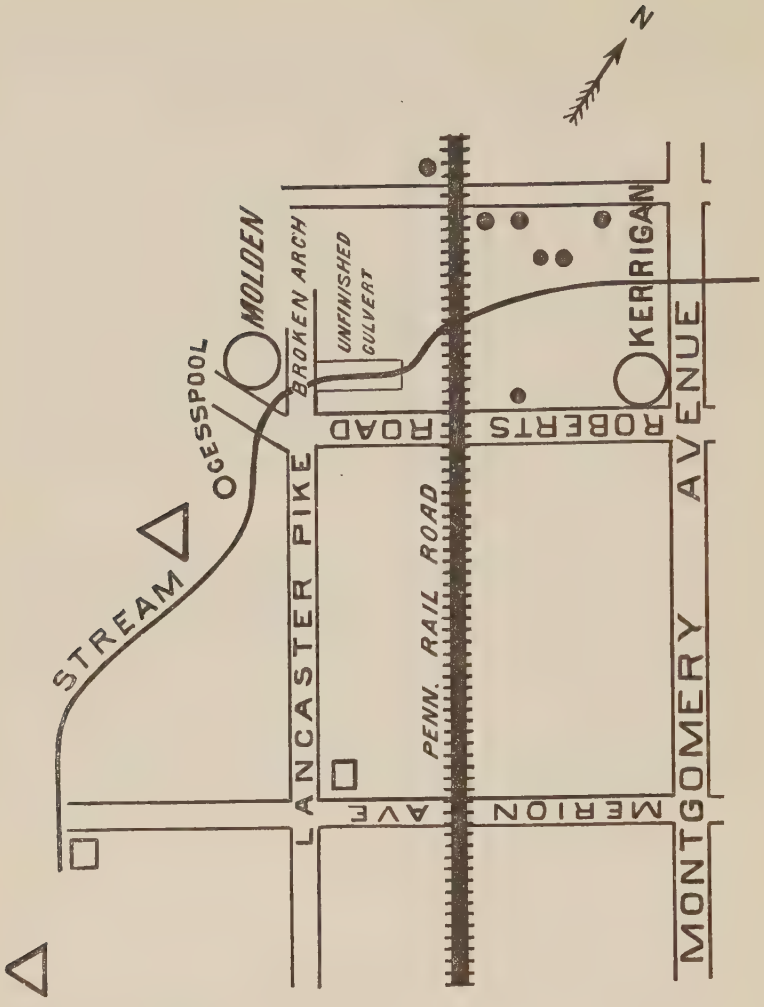
Dr. Benjamin Lee,

Secretary State Board of Health:

In order to determine whether the nuisance complained of was really prejudicial to the public health, and not simply offensive to the sense of smell, the Secretary addressed letters to two leading physicians of the neighborhood, inquiring whether fevers were unusually prevalent in the district referred to, and whether, in their opinion, the filthy piggery was in any degree responsible for the fact. The following replies appeared to establish both propositions affirmatively:

Benjamin Lee, M. D.

Dear Doctor: Yours of 25th in reference to typhoid fever in Rosemont and Bryn Mawr at hand. There are quite a number of reported cases of typhoid and malarial fevers in the vicinity. I have in my charge two decided cases, both in Bryn Mawr proper, on south side of Pennsylvania railroad, two other cases having the prodromic symptoms, living in the district where most of the sickness abounds. A small stream runs, except in very dry times, through the district infected. The outline of the infected district can best be shown by the rude diagram on opposite side:



The stream is represented by the irregular line; the rectan les, the position of my cases; the circles, two objectionable places; the triangles, two boarding-houses; the heavy dots, the cases as far as I know; the upper circle is a saloon kept by a negro, and in a filthy condition; the lower circle, a lot held by a man who has a mania for antique relics, and dwells with his numerous animals as one family.

The place certainly needs looking after, and, if I can be of any service, shall be pleased to assist in ridding the community of the nuisances.

Yours truly,

W. C. POWELL.

Ardmore P. O., Montgomery Co., Pa.

Benjamin Lee, M. D.,

Dear Sir: The district of Rosemont, in which typhoid fever prevails, is unsanitary for various reasons, but the chief cause of trouble is the pollution of a stream which goes through the region affected.

Other unsanitary conditions are the over-crowding of houses, with little or no drainage, and the presence of several hog-pens, which alone constitute a nuisance of the worst form.

Very truly yours,
GEORGE S. GERHARD.

September 26, 1885.

The Board being at this time entirely without provision for making inspections of nuisances of this character, the Secretary addressed a communication to the board of health of Philadelphia, requesting them to detail the inspector to whom such investigations were usually assigned to examine and report, stating especially what steps it would be necessary to take in order to put the premises in a thoroughly healthful condition. The request was promptly acceded to, as will be seen by the following correspondence and report:

Health Office,
S. W. Corner Sixth and Sansom Streets,
Philadelphia, *September 29, 1885.*

Benjamin Lee, Esq.,
Secretary State Board of Health:

I am directed by the board of health to transmit to you the following copy of resolution passed this date.

Respectfully yours, &c.,
WILLIAM P. TROTH,
Chief Clerk.

Resolved, That a copy of the report of Disinfector Kelly, relative to investigations at "Rosemont," Montgomery county, be sent to the Pennsylvania State Board of Health.

Philadelphia, *September 28, 1885.*

A. A. Hirst, Esq.,

Secretary State Board of Health

Sir:—I have the honor to report that, by direction of the Board, I visited "Rosemont," Montgomery county, for the purpose of inquiring into the causes of the several nuisances reported to the State Board of Health. The drainage of the immediate locality complained of is generally directed to a small creek or run, extending from a point south-west and northward across the Lancaster turnpike to and beyond Montgomery avenue, passing immediately in rear of a number of small houses erected on Robert's road and a street in rear. Although the run is dry at present, the indications

are that at times the sewerage passing down this course is very foul, and as building improvements continue, the nuisance will be aggravated. I would recommend that the owner of the property on the north side of the Lancaster turnpike and west of Roberts road, be directed to continue the partially constructed sewer northward to the Pennsylvania railroad, and fill up the low ground with earth; that the owners of the properties between the Pennsylvania railroad and Montgomery avenue be directed to construct a sewer of the same dimensions as the one above referred to and on the same line northward to Montgomery avenue.

The premises owned and occupied by Daniel Kerrigan, corner Montgomery avenue and Roberts road are, in my judgment, prejudicial to the health of the residents in that vicinity by reason of the keeping of hogs, and the accumulation of filth of various kinds dumped upon the lot surrounding a number of old shanties used as stables and hog-pens. The hog-pens are filthy in the extreme, no attention whatever being given to cleanliness. The owner should be directed to remove his hogs from this locality, together with all filth on the premises, and cover the saturated soil with cleanl earth.

The hog-pens of William Molden, corner Lancaster pike and Roberts road, are in their present condition a nuisance, the owner not recognizing the importance of keeping the place in good sanitary condition. The owner should be directed to construct new pens farther removed from the public road, destroy the old pens and thoroughly clean and remove all filth, decayed garbage, and manure.

Respectfully submitted.

(Signed,) CHAS. F. KENNEDY,
Disinfector.

Desirous of still further confirmation of the existence of diseases traceable to the nuisance complained of, I now appointed Dr. William B. Atkinson special medical inspector to the Board for the counties immediately adjacent to the city of Philadelphia, subject to the approval of the Board, and instructed him to make a thorough inspection of the entire neighborhood, inquiring as to the actual cases of fever or filth diseases and noting all insanitary conditions. At the same time I placed in his hands the following notices to be served on Daniel Kerrigan and William Molden. These notices, were duly served, the latter by Dr. Atkinson himself, the former by Mr. Sim, one of the complainants, as Kerrigan took care to keep out of the way during Dr. Atkinson's visit. These notices, it will be observed, contained specific directions as to the mode of abating and removing the nuisance.

State Board of Health, Pennsylvania,
Executive Office, Philadelphia, *October 1, 1885.*

To Daniel Kerrigan, Rosemont, Lower Merion township, Montgomery county, owner and occupier of premises situated corner of Montgomery avenue and Roberts road:

You are hereby notified and required to abate and remove within five days from the date of the service hereof, a certain nuisance on the above-described property, arising from a filthy piggery and cow-yard and refuse heap, which nuisance has been declared to have a tendency to endanger and be prejudicial to the public health. On failure to do and perform which, the said nuisance will be removed at your expense, and a lien entered agreeably to the provisions of the act of Assembly.

By order of the State Board of Health.

Attest:

Benjamin Lee,
Secretary.

Served October 6, 1885, upon Mr. Daniel Kerrigan, owner, agent, or occupier of the within-described premises, by Charles Sim, acting for special Medical Inspector of State Board of Health.

In order to abate this nuisance it is ordered:

First. That all pigs and hogs shall be removed from the premises.

Secondly. That all filth and garbage shall be removed from the premises.

Thirdly. That the saturated soil be freely sprinkled with chloride of lime or hypochlorite of soda, and

Fourthly. That the saturated soil be then covered with clean earth to a depth of four inches.

Witness of service of above.

HARRY B. FRENCH.

State Board of Health, Pennsylvania,
Health Office, Philadelphia, *October 1, 1885.*

To William Molden, Rosemont, Lower Merion township, Montgomery county, owner, agent, or occupier of premises situated corner Lancaster pike and Roberts road:

You are hereby notified and required to abate and remove within ten days from the date of the service hereof, a certain nuisance on the above-described property, arising from filthy hog-pens, which nuisance has been declared to have a tendency to endanger and be prejudicial to the public health. On failure to do and perform which, the said notice will be removed at your expense, and a lien entered agreeably to the provisions of the act of Assembly.

By order of the State Board of Health.

Attest:

Benjamin Lee,
Secretary.

Served October 5, 1885, upon William Molden, owner, agent, or occupier of the within-described premises, by William B. Atkinson, M. D., Special Medical Inspector.

In order to abate this nuisance it is ordered:

First. That new pens be constructed at a much greater distance from the public road.

Secondly. That the old pens be destroyed.

Thirdly. That all filth, garbage, and manure be removed from the site of the old pens, and

Fourthly. That the saturated ground be sprinkled with a disinfectant and then covered with clean earth to a depth of four inches.

PHILADELPHIA, *October 6, 1885.*

BENJAMIN LEE, M. D.,

Secretary State Board of Health:

DEAR SIR: In accordance with your instructions, I visited Rosemont, Montgomery county, and served upon William Molden the notification. He assured me that he would attend to the matter, and do what he could to prevent his place being a nuisance.

Although I waited for several hours, and long after his usual time for returning to his sleeping place, I was unable to find Daniel Kerrigan, and by request, I left his notice with S. Fuguet, Esquire, who assured me that he would have it served by a proper person, and return to me the duplicate notice after such serving.

I visited several of the physicians, and also other prominent gentlemen in the neighborhood, but could obtain very little positive information as to the owners of the properties draining into the run. I called upon Mrs. Hawkins, whose boarding-house is just above Molden's place, on the hill, and directed her attention to the importance of a thorough cleansing of the pipes and drains from her place, and which emptied into this run. She assured me that this should be done without delay.

I ascertained that neither at this place nor at the boarding-house some distance higher up on the hill had there been any cases of sickness of any kind. I was informed, not very definitely, of the existence of two or more fresh cases of typhoid fever. Indeed, it would seem that a form of fever, variously called typhoid, typho-malarial, and malarial prevails in this locality from below Bryn Mawr up to Gulf Mills. The absence of all the physicians upon whom I called, save Dr. Lindsay, and of others who could inform me, frustrated my efforts to obtain definite knowledge as to the locality and nature of the cases. I found that the drainage of the run complained of virtually ceased at the point where it passes under the Lancaster Improvement Company's road. The arch had fallen down, and completely choked up the passage. Were this rebuilt and the way kept open, there would be an opportunity for the drainage to pass through into the large brick culvert partially completed on the north side of the Lancaster road.

I would recommend that this be urged upon the Lancaster Improvement Company, and that the sewers suggested by Disinfector Kennedy be completed by the persons now draining into this run. In its present condition it will always be a disease-breeder.

I cannot too strongly condemn the nuisance on the lot at the corner of Roberts road and Montgomery avenue. It should not be tolerated a day longer. The full force of law should at once be invoked to abate it.

Respectfully,

WILLIAM B. ATKINSON, M. D.,
Special Medical Inspector.

At the expiration of the five days for which notice was given, I visited Rosemont in person, in order to see whether the orders of the Board were being complied with. I found that nothing whatever had been done, and that the man Kerrigan was living with his children and pigs in one common hovel, in a condition of indescribable filth, while the air was filled with sickening effluvia for a long distance around. I saw the offender, and he gave me his solemn promise that if I would allow him two days' grace he would remove his pigs and put the premises in good condition. A week later I was surprised to be informed by the complainants that no steps whatever had been taken to comply with the instructions which had been given. It was evident that the nuisance was being defiantly maintained, with malicious intent, and that all forbearance and clemency were entirely misplaced on such a character. I accordingly, after considerable correspondence with the Attorney General and the district attorney of Montgomery county, John W. Bickel, Esq., and consultation with an attorney of Philadelphia, in order to determine the precise limitations of the authority reposed in the Board by the act of Legislature creating it, and the proper mode of proceeding to prosecute under its provisions, requested the complainants to make affidavit to the facts before a justice of the peace, and to place the same in my hands with as little delay as possible. This was done, and the following are copies of the affidavits. It will be seen that they cover not only the "Kerrigan" nuisance, but all other insanitary conditions in the district. This was done at my special request; first, because I did not wish it to appear that the Board was making a scape-goat of a poor man, and winking at the delinquencies of his wealthy neighbors; and secondly, because I desired to accomplish a thorough sanitary reform in the village, and make the case a precedent for all future efforts of this kind throughout the State.

COMMONWEALTH OF PENNSYLVANIA, } *ss:*
Montgomery County, }

On the twenty-sixth day of October, A. D. 1885, personally appeared before me, the subscriber, one of the justices of the peace in and for the county of Montgomery, Harry B. French, who, being duly affirmed according to law, doth depose and say that he is a resident of Rosemont, in said county,

and has personal knowledge that, in the immediate vicinity of Rosemont, there are many cases of typhoid and malarial fevers, resulting from nuisances maintained in and along the depression extending from the south side of Lancaster pike, and on through to and beyond Montgomery avenue northward, and has been informed by a reputable physician that above fevers result from the nuisances to be mentioned, and by parties to be mentioned, and has also been informed that reputable physicians of the neighborhood have condemned said nuisances in the strongest terms as being the cause of the dangerous fevers above-mentioned; that these nuisances are lack of proper drainage facilities on the properties of J. Howard Supplee, William Molland, William Callahan, the Misses Hawkins, Peter Malone, James Butler, Edward Harold, Frank P. Cutter, Mrs. Cutter, the obstruction of proper drainage by the Lancaster Improvement Company, and the maintenance of a pig-stye, cow-house, etc., in said hollow by Daniel Kerrigan.

HARRY B. FRENCH.

Affirmed and subscribed before me this 26th day of October, A. D. 1885.

SAMUEL F. STADELMAN, [SEAL.]
Justice of the Peace.

COMMONWEALTH OF PENNSYLVANIA.
Montgomery County, } *ss:*

On the twenty-seventh day of October, A. D. 1885, personally appeared before me, the subscriber, one of the justices of the peace in and for the county of Montgomery, Stephen O. Fuguet and Frank K. Hipple, who, being duly sworn according to law, do severally depose and say that they reside at the corner of Montgomery avenue and Roberts road, in Lower Merion township, Montgomery county, aforesaid; that one Daniel Kerrigan, who lives in a hollow at the westerly corner of said Montgomery avenue and Roberts road, opposite to the premises of the deponents, maintains a nuisance on his premises, which deponent believes to be prejudicial to public health, to wit: filthy and ill-kept piggeries, cow and horse-sheds, and undrained sewage; that a run extends through said hollow from beyond Lancaster road, on the south, to beyond Montgomery avenue, on the north, which run is obstructed and fouled by the said Kerrigan's piggeries, sheds, and sewage; and deponents are informed, and believe, said run is further obstructed by the Lancaster Avenue Improvement Company's defective culvert under Lancaster avenue, and is further fouled by want of proper drainage on the premises of other residents along said run, to wit: one William Mollan, William Callanan, and others. Deponents further say that in the neighborhood of said run, and adjacent to said premises of Daniel Kerrigan and others, there are numerous cases of malarial and typhoid fevers, which deponents are informed by reputable physicians arise from the said obstructions and fouling of said run and the ground adjoin-

ing, and from the filth and nuisances maintained by said Kerrigan and others.

FRANK K. HIPPLE,
STEPHEN O. FUGUET.

Sworn and subscribed before me this twenty-seventh day of October, A. D. 1885.

SAMUEL F. STADELMAN, [SEAL.]
Justice of the Peace.

As soon as I received the affidavits, I summoned Mr. John Whiteman, constable of Montgomery county, residing in the neighboring village of Ardmore, and gave him instructions to swear out a warrant for the arrest of Daniel Kerrigan as the agent of and in the name of the State Board of Health, and to proceed at once to arrest him and carry out the instructions of the Board in abating and removing the nuisance. These orders he faithfully executed, lodging the culprit in the county jail at Norristown, removing the cattle and hogs from the premises, burning up the filth-sodden boards of which the shanties were composed, carting away the filth, disinfecting the earth and then covering it with clean earth. Such was the outrageously filthy condition of the place, that a large number of men were occupied for a week in putting it into a state in which it ceased to be a menace to the health of the neighborhood.

By permission of His Excellency the Governor, I take advantage of an unavoidable delay in going to press to complete the history of this case, although in so doing I encroach somewhat on the report of the ensuing year. Notices were served upon W. J. Dunne, agent of the Lancaster Improvement Company, ordering the repairs of defective culvert; on J. Howard Supplee, ordering the filling up of the low ground and the construction of a proper sewer through his property; on William Callanan, ordering him to maintain his slaughter-house in the condition of cleanliness prescribed by the "regulation" of the State Board of Health, and to cease to pollute the stream in the rear of his place; on the Misses Hawkins, ordering them to provide for the removal of the sewerage from their boarding house, and to prevent it from escaping into the said stream. A careful inspection of the neighborhood subsequently by the Secretary and Medical Inspector Atkinson revealed the fact that William Molden had abated the nuisance upon his property, that William Callanan had built a thick stone wall between his premises and the stream, which effectually prevented all escape of offal and drainage from the former into the latter, and was keeping his house in good sanitary condition, and that the Kerrigan property was perfectly clean and inoffensive. Mr. Supplee promised to comply with the instructions of the Board in completing a sewer which he had already begun through his property, and uniting with his neighbors in converting the filthy run into a properly constructed brick open culvert with a constant gradient, as soon as the weather would admit of such operations in the spring. There is, therefore, every reason to hope that another summer will

find this beautiful neighborhood once more healthful and inviting to all the senses, instead of being, as it was during the past warm season, a stench in the nostrils of every passer-by and a hot-bed of infection to those who were compelled to reside there.

The trial of Daniel Kerrigan occurred on the 8th and 9th of December at Norristown. The Board were successful in procuring the valuable services of Mr. H. K. Weand, of Norristown, as private counsel to assist District Attorney Bickel in the management of the case. The Secretary and Inspector Atkinson attended as witnesses. The trial lasted the greater part of two days. The prisoner had the benefit of the skillful defense by two prominent members of the Norristown bar, who contested every step with the utmost stubbornness. He was, however, found guilty. As the Board did not wish to appear vindictive in the matter, but simply to compel acquiescence in its decision and obedience to its instructions, and to obtain that moral support which always results from a favorable verdict in court, it acquiesced in the request of the counsel for the defense for a sentence of imprisonment only, without fine, and that for but one month, the period of confinement previous to the trial being included. The criticism will doubtless be made that the procedure of the Board in this abatement and prosecution was unnecessarily slow; that too much lenience was shown to the offender in the early part of the case, and that serious results might have been prevented by greater promptness. It must be remembered, however, that the procedure was an entirely new one. The machinery had to be constructed *de novo*. The laws needed to be carefully investigated, the act defined, the powers of the Board and their limitations accurately determined. It was an unheard-of thing for a strange power to step into a country village, say to the inhabitants "You must do thus and so," and when its behests were not obeyed, to lodge the contumacious offender in jail, take away his property, and destroy his house. There was at the first blush a look of high-handed tyranny about it, and it was, therefore, essential that there should be no appearance of unseemly haste, no suspicion of concealed motive, no ground for the charge of persecution—the nuisance must be palpable to the entire neighborhood, not simply discoverable by a trained expert. Hence, every step needed to be carefully weighed and taken only after consultation with men learned in the law. Had the prosecution failed, the Board would have lost prestige immensely and the cause of sanitary reform would have been set back at least a decade. The Board is quite content to rest its defense against any charges of unnecessary delay in this instance with those who were most interested in the abatement of the nuisance, and who most closely observed its conduct of the case from the beginning. The following documents are appended as of interest in this connection:

State Board of Health,
Executive Office, 313 S. Fifteenth St.,
Philadelphia, *November 2, 1885.*

Mr. John Whiteman,

Constable, Ardmore.

You are hereby empowered and instructed to proceed, without unnecessary delay, to the premises of Daniel Kerrigan, corner Roberts road and Montgomery avenue, Rosemont, Lower Merion township, and remove the hogs and cattle therefrom to tear down the shanties and hog-pens thereon; to remove all filth, manure, and garbage therefrom; to disinfect the foul earth with chloride of lime, and to cover it with fresh clean earth to a depth of six inches. You are further authorized to employ all the force and engage all the assistance necessary to carry the above instructions into effect. This Board, for its part, engages to meet all the necessary expenses incurred in the execution of this order.

By order of the State Board of Health

Benjamin Lee,
Secretary.

Opinion of John W. Bickel, Esq., District Attorney of Montgomery County, as to the Powers of the Board to Enforce the Abatement of Nuisances.

Norristown, Pa., *October 19, 1885.*

Benjamin Lee, M. D.,

My Dear Sir: For three weeks I have been workedday and night with the preparation and trial of cases in our criminal court, beside directing the investigation of the Daly murder case.

Saturday ended the court labors for the term, and I have given a good part of to-day in an examination of the subject-matter of your recent letters, and I have gone over the whole subject of the legal title "nuisance" as well as the power of boroughs and cities to abate public nuisances.

The conclusions I have come to I will sum up as follows, viz:

First. Section six of your act of incorporation is intended to give your Board power to order nuisances detrimental to health to be abated and removed.

Second. I believe the act *intends* to give you powers as ample as that given to boroughs and cities, though it should have been expressed more clearly.

Third. That the last clause of section five authorizes your Board to enforce such regulations as will tend to limit the progress of epidemic diseases.

I would, therefore, recommend that you adopt a "*regulation*" somewhat as follows, viz:

That, whenever a complaint is made in writing to the Secretary of the Board of the existence of a nuisance, he shall forthwith, as the executive officer of the Board, investigate the matter, and shall determine whether the alleged nuisance is detrimental to the public health or the cause of any special disease or mortality; and in case he shall so find, then to notify the owner or occupier of the premises, in writing, of such finding, and the executive officer shall thereupon order and direct the abatement and removal of the same within days; and in the event of the failure of said owner or occupier of the property to abate and remove said nuisance, then the executive officer shall proceed to abate and remove the same, and shall employ all the force necessary to do so, and shall proceed by warrant, arrest, and indictment to convict the party failing to obey said order of abatement and removal.

Perhaps you have already adopted a regulation. The above I simply suggest as a form. You have given the matter much more study and you can word it to suit.

When the Legislature again meets, you can formulate such amendments as your experience may suggest.

The penal code of the State now only authorizes the sheriff to abate a nuisance after conviction upon an order of the court.

In prosecuting the powers and functions of the State Board of Health, great care should be exercised in the investigation of cases.

No finding to gratify a sentimental or speculative grievance. Many things not pleasant to the senses of sight and smell, and even obnoxious to *over-nice* people, are not *nuisances detrimental to health*, and such should not be condemned, because by such a course the usefulness and influence of your Board would soon be destroyed.

Yours truly,

JOHN W. BICKEL.

Opinion of Alfred Lee, Jr., Esq., Member of the Philadelphia Bar, on the Powers of the State Board of Health of Pennsylvania.

The power of enforcing the provisions of the act of Assembly of June 3, 1885, establishing a State Board of Health, is found in the sixth section. It is a penal statute, and must, therefore, be strictly construed, (*i. e.*, nothing is to be taken against the party charged, in any proceeding under it, by the inference of the court,) yet not so strictly as to defeat its object. Strictly speaking, then, no peculiar remedy outside of the common law can be pursued by the Board, unless it is plainly expressed in the act. Thus viewed, this act is defective. The important power expressly lodged by the Legislature in the Philadelphia board of health, whereby the expense attending the removal of a nuisance remains as a lien against the property concerned,

is not conferred by the present act, (although, of course, its advantage can be felt by acting *through* the Philadelphia board.) Again, it would have been well to have expressly declared any violation of the Board's orders a *misdemeanor*, which is now only implied.

It may now be fairly doubted whether the Board can proceed criminally against an offender by having him arrested and bound over by a justice of the peace for trial by the court of quarter sessions.

Should it be desired to try this remedy, however, the agent of the Board, member or otherwise, should first notify the offender, owner of the property, of his intention to prosecute him, in accordance with the act, if he do not remove the nuisance. Upon his failure to comply with the order, the prosecutor makes oath or affirmation before a justice of the peace that so and so, (giving his Christian and surname,) tenant of such a property, (describing it with sufficient accuracy to identify it,) maintains a nuisance thereon, which he refuses to remedy, in accordance with the order of the Board and the act of Assembly.

The justice thereupon issues a warrant for his arrest, addressed usually to the constable of the proper ward or precinct, though it may be addressed to another, whose name is specified, or to the sheriff of the county, who, in that case, may act by deputy. The warrant must state the specific offense charged, must aver that information was duly made thereof, by oath, before a magistrate having jurisdiction, and must specify defendant's full name. Defendant, having been brought before the magistrate, an *ex parte* hearing takes place, *i. e.*, the prosecutor *only* offers evidence, the defendant presenting no defense; and, if probable cause appear, or, in other words, if a *prima facie* case be made out, the defendant, or prisoner, is bound over by the justice, *i. e.*, released on offering sufficient bail, to appear at the next session or term of the court of quarter sessions. Previous to the sitting of this court, a grand jury is convened, to whom the district attorney presents an indictment founded on the proceedings before the magistrate, and before whom the prosecutor appears with his witnesses.

This, also, is an *ex parte* proceeding. If a *prima facie* case be established to the satisfaction of the grand jury, they find "a true bill," the foreman indorsing those words, with his name and the date of the finding, on the indictment, otherwise they ignore the bill, the foreman indorsing *ignoramus*.

In case of a true bill being found, defendant must appear for trial at the ensuing court. Such would be the course of procedure upon the *arrest* of an offender for a misdemeanor such as a nuisance. A civil action of debt for the recovery of the penalty (of $100) before a justice of the peace would probably lie; it certainly would for the breach of any ordinance of a city, township, or borough. But, should this course be adopted, what, with the defendant's right of appeal, and to a stay of execution, there might be serious delay in the enforcement of the penalty. Indeed, it is evident

that only a prompt and summary method of enforcing its orders can be of much value for accomplishing the objects of the Board.

In the absence of specific directions in the act itself as to the manner of its enforcement, a consideration of its evident purpose in connection with other legislation of a kindred nature would quite probably justify a criminal arrest before a magistrate, followed by indictment and conviction, as above described. It is evident the Legislature meant to endow the Board with very extensive powers, placing it over all the local health boards. It is given "power and authority to order nuisances, etc., * * to be abated and removed, and to enforce quarantine 'regulations' as said Board shall direct." This, it must be claimed, makes the Board's decision of what is a nuisance final. This granted under the act of 31st March, 1860, Purdon's Digest, 336, § 108, "any person who shall erect, (&c.,) * * any public nuisance shall be guilty of a misdemeanor, and on conviction, shall be sentenced to pay a fine, * * etc." The Board could then, it is conceived, proceed under this act as an individual, by the arrest of the offender as above.

In the somewhat defective condition of the act in the particulars mentioned, though otherwise it seems very well drawn, almost any mode of procedure adopted is more or less of an experiment. It is suggested that, upon a refusal to submit to the order of the Board, the Board apply directly to the sheriff to abate the nuisance, (the owner of the property having first been duly served with a notice, which should be printed.) This the sheriff proceeds to do at the defendant's expense. Or the representative of the Board might swear out a warrant before a justice, directing the sheriff to abate the nuisance. A transcript from the docket of the justice of a judgment obtained against defendant for the expenses of removing the nuisance entered in the prothonotary's docket would remain as a lien against the defendant.

HEALTH OFFICE,
S. W. CORNER OF SIXTH AND SANSOM STREETS,
PHILADELPHIA, *September 28, 1885.*

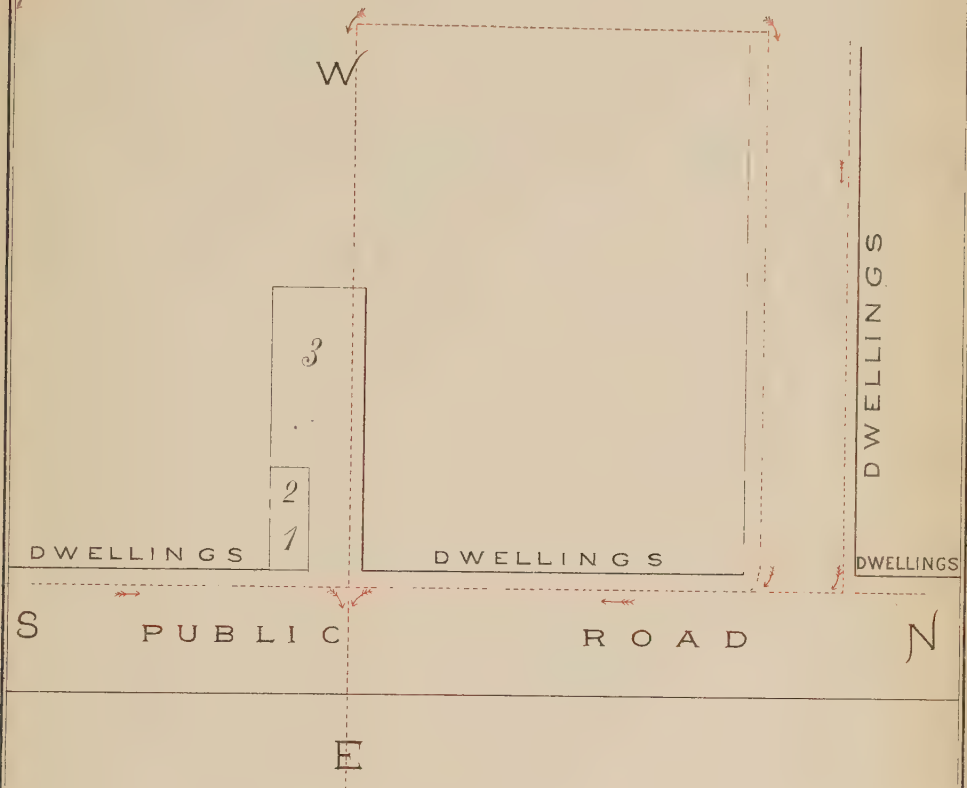
To the President and Members of the State Board of Health:

GENTLEMEN: I am directed by the board of health to transmit to you the following copy of resolution passed this date.

Respectfully yours, &c.,

WILLIAM P. TROTH,
Chief Clerk.

Resolved, That a copy of the report of the Medical Inspector relative to his investigation of cause of typhoid fever at West Fernwood, Delaware county, Pennsylvania, be sent to the Pennsylvania State Board of Health.



1. Connor's House.
2. Pump Well.
3. Lot.
Red dotted lines the course of drainage.
Course of flow.

Office of the Board of Health,
S. W. Corner Sixth and Sansom Streets,
Philadelphia, *September 28, 1885.*

A. A. Hirst, Esq.,

Secretary Board of Health:

Sir: I have the honor to report that in company with Mr. Kennedy I visited the residence of William Connor, in West Fernwood, Delaware county. The locality is flat, poorly drained, with a hard clay sub-soil. I found in the Connor family one severe case of typhoid fever and three convalescents from that disease, while Mrs. Connor died about a week ago from the same malady.

I have appended a rough diagram which will indicate the course of the house drainage, relatively to Mr. Connor's residence. It will be seen by reference to the diagram that an open ditch runs through Connor's lot, while the drainage from the entire hamlet centers in front of his dwelling, where, owing to defective grading, stagnant accumulations remain. Mr. Connor says that "during heavy rains fecal matter from overflowing privies is carried through the ditch in his yard, and that the pump-water is at such times muddy." I procured a sample of the pump-water for analysis, and will submit the result as soon as made. There are no other cases of fever in the place. The local conditions surrounding the Connor house are positively pernicious and unhealthy.

Respectfully submitted.

(Signed) J. HOWARD TAYLOR,
Medical Inspector.

Dr. Benjamin Lee,

My Dear Sir: The following cases of sickness were under my care at West Fernwood: I was first called to see James Connor, August 29, 1885. Tillie C. was complaining some at the same time. John C., two days after Tillie. The mother, Mrs. C., about ten days after the first case, James. She died in one week after going to bed. William C. stopped his work, and was kept to his bed for about two weeks, not being very ill at any time.

A description in brief of one case will suffice for all, as their symptoms were similar in all: Headache, bleeding of the nose; evening temperature higher than morning, 103°–104°. Loss of appetite, diarrhœa, profuse hemorrhage from bowels in three of the cases, delirium; tenderness in right iliac region, marked tympanitis. Three of the cases ran a regular course, terminating favorably in about three weeks. The mother, as stated, died on the seventh day after going to her bed. The daughter, Tillie, is only now fairly convalescing after having been in bed seven weeks. A continued high temperature and very quick pulse, 120–130, for two weeks after the more alarming symptoms of excessive diarrhœa and hemorrhage from bowels ceased, marked her case as different from her brothers.

These five cases, all in one family; your attention has been directed to the probable cause.

Very respectfully,

FRANCIS F. ROWLAND.

MEDIA, *October 13, 1885.*

Concerted Action between the State Board of Health and the State Board of Agriculture in Reference to Contagious Diseases among Domestic Animals.

In accordance with a resolution of the State Board of Health, the Secretary addressed a communication to Thomas J. Edge, Esq., Secretary of the State Board of Agriculture, announcing the organization of the Board, and assuring him of its desire to cöperate with the State Board of Agriculture in every effort to prevent the introduction and spread of contagious and infectious diseases among domestic animals in this State. To this communication Mr. Edge returns the following courteous reply:

During the latter part of the month of August, an epidemic broke out among cattle in the stock-yards at Erie; Dr. Germer, the President of the Board, at once made a personal investigation of the animals and reported the circumstances to the Secretaries of both Boards. The reply of Mr. Secretary Edge to Dr. Germer's communication and the report of Veterinary Inspector Bryce to the Secretary, which are herewith appended, contain valuable information on the subject of

TEXAN OR SPLENIC FEVER.

BOARD OF AGRICULTURE,
HARRISBURG, PA., *August 29, 1885.*

EDWARD W. GERMER, M. D., *Erie, Pa.*

DEAR SIR: The communications of Dr. Bryce to Secretary Africa and myself have had due attention, and I have written him in relation to the subject-matter of the letters. The disease alluded to by him as Texan or Splenic fever, is one quite common in this State and is not regarded with much fear in our eastern counties. It stands alone in its class of stock disease, having, so far as I know, no companion. To a certain extent, it may be termed a contagious disease, but at a certain point its right to this title ceases. The cattle alluded to, which were, of course, new-comers in your county, at some time in their travels, either came in contact with the Texan steers or their excretia; they have thus become infected, but here the danger ceases; they cannot infect other native or Erie county cattle. We have had outbreaks every year for twenty or more years and will be liable to them so long as the Texans are moved North after frost in the spring and before a frost in the winter; a very moderate frost will not only destroy the germs of the disease in intermediate objects, but also in some way decreases their development in the sick animal; we have repeatedly had animals in charge badly infected, but the first cold night with frost would

change them into convalescents with a rapidity which surprises the owner. We have had outbreaks in droves of cattle held for sale, and in such cases the owner guarantees the purchaser against the death of those which he buys, and no fear is entertained as to the spread of the disease.

The Texan which produces the infection appears sound and healthy, and yet will infect every native (Northern) animal which crosses his path or which comes in contact with any of his excretia. But keep this same Texan on our Northern pastures for say three months, and he loses this immunity, (if it may be so called,) and will die as quickly as our native animals.

If the matter was thoroughly investigated, I think it would be found, that the animals now diseased were probably driven East from the Indian Territory in obedience to President Cleveland's proclamation ordering all illegal lease-holders to remove their stock. We think that no fear need be entertained as to the spread of the disease, and probably ere this reaches you it will have attained its maximum and will be on the decrease. I have full power as the Secretary of the Board of Agriculture and as special agent of the Governor to come up and investigate the matter, but funds are not available for the purpose, and we have already investigated so many similar cases that it does not seem worth while. The ticks, about which we hear so much, may possibly act as intermediate agents in conveying the disease from the Texans to our Northern cattle, but they have no further connection with the matter. I would not hesitate to put them on my healthy native cows at any and all times, provided they had never been on the genuine Texas cattle. If it is deemed worth while, I can come up, but with our present understanding of the matter it would avail nothing.

Respectfully yours,

THOMAS J. EDGE,

Secretary.

ERIE, PA., *September 22, 1885.*

BENJAMIN LEE, M. D.,

SIR: Yours of the first instant received asking for a report of our recent outbreak of Texan fever. Some time during the summer, a portion of the fair grounds was leased to a company for a stock-yard, and within this a slaughter-house was built during the summer. In the last few months the home supply of cattle running short, cattle have been shipped from the East St. Louis stock-yards to supply the market. These cattle are said to be Indian and Colorado cattle, but of this we have no positive proof. These cattle were pastured on a common just outside of the fair grounds, and inside of the city, in common with the milch cows herded there by their various owners, their owners having one or two cows apiece for their own immediate use.

On Tuesday, August 25, I was asked to give my opinion before the Executive Committee of the Agricultural Society as to the desirableness of admitting cattle to the fair grounds during the coming fair. An adverse opinion was given if the imported cattle came from below the line of per-

manent infection. Simultaneously with this, the disease was making its appearance among these native milch cows that were pasturing near the fair grounds, and on a farm half a mile south of the south-eastern portion of the city, three miles from the fair grounds. These cattle had with them for three days, six weeks previous, some Texan steers that had broken out of their own pasture and into the pasture of these natives.

The symptoms were those now so well known as splenic fever: Loss of appetite, failing of the milk-supply, rapid pulse, high temperature, diarrhœa with copious copper-colored urine, and quickly failing strength, and usually death in two or three days.

The post mortem appearances were always what was to be expected; spleen enlarged, say to twice its ordinary size, disorganized and pulpy, and this feature was so apparent that doubt as to the disease at once disappears. The liver showed signs of more or less inflammation, the gall bladder filled with a thick sluggish mass, the kidneys were discolored, and the bladder was full of the inky-colored urine.

There were a few, a very few, recoveries, and in these the disinfectant treatment had the best success, or possibly these cases were less severe owing to better constitutions.

The mayor and city councils have since taken action on the matter and are preparing to pass a by-law prohibiting the unloading of cattle in the city at such times as the mayor may dictate. I am afraid that this will hardly touch the bottom, as the State should in some way prohibit the importation of these cattle that come from below the line known to be permanently infected during the summer months or even in the spring time, for we well know that frost positively destroys the infectious germs.

Of course it is well known to you that these Texans do not themselves suffer from the disease, but in them the germs multiply, while in our natives the germs grow, producing the sickness, and therefore not infectious from our natives.

Two things are fortunate as regards the meat and milk supply; the milk secretion stops at once when the fever appears, and milch cows, being the cases generally affected, are not available for beef.

Yours truly,

J. BRYCE.

THE RESULTS OF VACCINATION DURING AN EPIDEMIC OF SMALL-POX AT SUGAR NOTCH, LUZERNE COUNTY, PA.

To BENJAMIN LEE, M. D., *Secretary and Executive Officer, State Board of Health, 313 South Fifteenth Street, Philadelphia.*

DEAR SIR: In the month of May, 1881, a young lady of the name of Brown came here from Philadelphia sick. I was called by the family to

examine the case, and found it to be confluent small-pox. The girl recovered. The poor directors of the Hanover district now took charge of the cases that followed. Before the malady was rooted out from this family, six of its members died. *Not one patient had been vaccinated, as far as I have been able to learn.* The next attacked were the Albert family. I was called on by the borough council to examine the case, and found the man, William Albert, a perfect mass of sores—a second confluent case. *This man had not been vaccinated.* The disease now began to spread rapidly, and promised fair to extend all over the entire district. During the latter part of the month of May, I vaccinated all who were willing to be protected, and with much gratification I am able to affirm that *each* and *every* one escaped. About the beginning of June the spread of the disease caused such terror that the borough council took active measures for its suppression. As their medical officer, I vaccinated every individual, and even where there were small-pox patients in the house, all those I vaccinated escaped severe illness. There were a few cases of varioloid, *but not one died that had been vaccinated by me*, save two children who were convalescent and were killed by improper exposure.

The disease broke out a second time in the house of Thomas Albert. His son Edward was one of the worst cases of the disease in its confluent form that I ever saw. I vaccinated the young women of the family, who were afraid of disfigurement. They all escaped with three or four days of illness and without impairment of beauty. The father and mother had been inoculated fifty years prior. While nursing their son, they complained of feeling slightly sick. I examined and found them to be suffering from a mild form of varioloid. The next case was Patrick Mooney, justice of the peace in and for this county, who had been inoculated in Ireland about thirty years ago. He was beyond question a very sick man, but recovered. I could give many other instances in which varioloid was contracted by parties who had been inoculated at periods ranging from ten to forty years before the exposure, and who laughed at the idea of their taking small-pox. I append a carefully prepared tabular statement of the number of persons exposed during the epidemic, number of cases of small-pox or varioloid, and number of deaths.

Permit me to remain, dear Doctor,

Yours, very respectfully,

J. J. SMYTHE, M. D.

October 17, 1885.

TABULAR STATEMENT OF EXPOSURES AND CASES.

NAME OF FAMILY.	Number exposed.	Number afflicted.	Died.	Recovered.
Byrnes,	14	11	6	5
Albert, first case,	8	1	1	
Albert, second case,	7	3	. . .	3
Hughes, first case,	10	4	4	
Hughes, second case,	16	3	. . .	3
Cannon, first case,	9	1	1	
Cannon, second case,	8	6	. .	6
Smith,	11	7	2	5
Mooney,	7	1	. . .	1
Love,	4	2	. . .	2
Jones,	5	1	. .	1
Lloyd,	2	1	. .	1
Talbott,	7	1	. . .	1
Eaton,	3	2	.	2
Total,	101	44	14	30

It will be seen from the foregoing that 101 persons have been exposed, of whom 44 were infected with the disease, 14 died, and 30 recovered. Forty-three per cent. of the persons exposed caught the contagion, 32 per cent. of whom died, and 68 per cent. recovered.

NOTE.—The above report is valuable, not only in its general testimony to the efficiency of vaccination, but as showing first the immense susceptibility of an average village population to the disease; secondly, how successfully an epidemic may be cut short by energetic action on the part of borough authorities, and thirdly, that the fact of previous inoculation does not render the individual safe, and should never be allowed as an excuse for neglect vaccination.

BENJAMIN LEE,
Secretary.

REPORT ON TYPHOID FEVER AT SUGAR NOTCH, LUZERNE COUNTY.

WILKES-BARRE, PA., *August 21, 1885.*

DR. BENJAMIN LEE,

Secretary State Board of Health:

MY DEAR SIR: Acting upon the request in your telegram of August 20, I to-day visited Sugar Notch to investigate the condition of the town, with special reference to the epidemic of typhoid fever, which now, happily, seems quite thoroughly stamped out. Inasmuch as this epidemic was carefully investigated in June last by Dr. R. Davis, of this city, who submitted

to me several specimens of Sugar Notch water for examination, I think I cannot do better than to inclose you a copy of Dr. Davis' report, which was published at the time in a local paper, the Wilkes-Barre *Record*.

At present there are but two persons ill with the fever; of the remaining sixteen who were ill, two died and fourteen recovered.

Miss Marsh, one of the two now ill, nursed fever patients at Plymouth and Sugar Notch for a number of weeks unremittingly, and finally succumbed the latter part of July. She is now convalescent.

The other, Willie Dando, aged ten, has been ill three weeks. His mother was one of the earlier cases, having been attacked June 11, and was convalescent in the latter part of July. Another son was taken in the same house June 7.

There have been in all eighteen cases, the first case that appeared having come directly from Plymouth.

Sugar Notch is a borough of some two thousand inhabitants, and all of these cases of fever were restricted to the extreme upper portion of the borough.

The sanitary condition is at present excellent, and is due, in great part, to the energetic action of the Lehigh and Wilkes-Barre Coal Company, in whose houses the fever appeared, seconded by prompt measures by the borough council.

Even before the fever appeared, stimulated by reports from Plymouth, sanitary measures were begun. At the breaking out of the fever, these were continued with great zeal; streets were cleansed, privy-vaults closed where found full, or nearly so, and new pits dug in their stead. The wells were promptly closed as soon as condemned, and water-pipes extended to all of the houses in this part of the town. Connection with these pipes was made June 12, and since then the wells and springs have been abandoned.

Disinfectants were provided by the relief committee, and generously used, the excreta being also buried. By these prompt and efficient means, what might have been a serious epidemic has seemingly been effectually stamped out.

The water used by this part of the town is supplied by the Lehigh and Wilkes-Barre Coal Company, and comes from a neighboring mountain stream. The company has fenced in the reservoirs, and not only this but also the stream itself, between the two reservoirs, and for some distance beyond the second or upper reservoir.

There was a privy upon the banks of the upper reservoir, or, rather, not far distant.

This has been removed and a new pit blasted into the solid rock, to receive the excreta from the only family living near the reservoir. There are a few families living higher up toward the source of this stream, and the privies used by these families, I am told by the authorities, have been removed, and new pits dug some distance away from the stream. I did not to-day personally investigate beyond the upper reservoir.

In conclusion, I may say that the two cases now existing are secondary to others in the same households. The epidemic seems to be entirely under control, and no apprehensions are felt of its further spread.

Very respectfully,

LEWIS H. TAYLOR, M. D.

The following is the report of Dr. Davis, alluded to in the above communication:

To the President and Members of the Sugar Notch Borough Council:

Having been invited by your honorable body to investigate the facts in connection with the outbreak of typhoid fever in your borough, and to determine, if possible, the cause of the same, I beg leave to submit the following report. A careful survey of the whole field reveals the following facts:

There are now twelve cases of the disease in Sugar Notch. To this group of cases is to be added that of Mr. Haines, who died of the disease on the 27th of May, and also that of John T. Davis, who is now nearly well. John T. Davis was the first of the group of cases now under investigation to be taken ill. For several weeks previous to his illness he was at work in Plymouth, and while there was in the habit daily of drinking hydrant water. He was taken ill on the 14th of April, this being about the time when so many hundreds of others were stricken with the disease in Plymouth. Without doubt, therefore, he contracted the disease by drinking, some time between about the 30th of March and the 6th or 7th of April, (for it would seem that at this time the contamination was at its height,) the water from the Plymouth hydrants which, as has been clearly proven, had been poisoned by the washing into the mountain stream which supplies the town of the accumulated excreta of a typhoid patient.

The remaining thirteen cases all had their origin in Sugar Notch. How did they get the fever?

John T. Davis' house is situated in the upper and mostly cleanly part of the town, and on the upper side of the main street. During the first weeks of his illness he used a privy vault situated above his house. In the early part of May, during a rain storm, this vault overflowed, and some of its contents ran over the ground and down between the houses to the street below. After this, at the suggestion of Mr. Brodhead, the patient's discharges were buried in a pit in a field near by, and the old vault filled up with earth, and a new and deeper one dug near by. The same was done with all the out-houses of the houses in this row, and too much praise cannot be bestowed upon those who instituted these and similar sanitary measures in your town.

It is to be remarked that eight of the thirteen cases under consideration are in the immediate neighborhood of John T. Davis' house. In the cellars of several of the houses of the row of houses to which Mr. Davis' belongs, there are wells of what looks like most excellent water. Such wells

exist under the houses of the next block to the Davis block. Mr. Calligan occupies one of these, and Mrs. Davis the other. Mrs. Calligan and two of her daughters are down with typhoid fever. Mrs. Davis' son is also down. There is another cellar under the Higgins block, a little lower down. Thomas Higgins is ill here. These families used water from these wells exclusively until warned against it by the authorities. It is a significant fact that the three remaining cases in this vicinity are boys about ten years old, and the only ones ill in their respective families, and on inquiry I find that they all confess to have played frequently at Calligan's house, and drank frequently from the Calligan well ten or fourteen days before being taken sick. One of these boys is in the same block as John T. Davis, next to Calligan's; one is across the road, and the other a little further down the street.

These wells are so situated with reference to the Davis vault as to render it almost certain that contamination of the water should take place. Indeed, it would be difficult to explain how it could escape such contamination. To make the chain of evidence connecting these eight cases with the Davis case complete, it remained only to examine the water from these wells and to find evidences of contamination in them. I, therefore, secured specimens of each and submitted them to Dr. Taylor, who found in each specimen unmistakable evidence of contamination with animal organic matter. It is quite probable that the water is much freer from contamination now than it was before the sinking of the new vaults and the filling up of the old, but it is still unfit for use, and I recommend the permanent abandonment of the wells.

I have no doubt that these eight cases owe their origin to the contamination of these wells with the excreta of John T. Davis, one of the original Plymouth cases.

There remains to be accounted for five cases situated some distance from the Davis case, and further down the same street. Mr. Haines and Miss Kintzer, living on opposite sides of the street, were both taken ill on the 14th of May. Mr. Haines died on the 27th, Miss Kintzer is convalescent; Miss Haines, a daughter of the deceased Mr. Haines, is now ill with the fever. Mrs. Dando and her son, living in the immediate neighborhood, are also ill.

The five cases which cannot be traced to the polluted spring water all drank water from a spring which is situated under the sidewalk, on the lower side of the street, near Mr. Haines' house. The Dandos also used occasionally water from Mrs. Lewis' well near by.

I have been unable thus far to trace any satisfactory connection between these five cases and the Davis case. They have not any of them used water from the Calligan or other wells in that vicinity. Neither am I able to explain how the spring beneath the sidewalk could have been contaminated from the Davis vault, for there is rising ground for a little distance between the two localities, and the drain from the Davis lot crosses the street

and passes back of the houses on the lower side of the street. It is true, however, that the old Davis vault is on higher ground than the spring, and it is just possible that percolation through the loose soil overlying the impervious layer of clay which lies two or three feet below the surface may have taken place, notwithstanding the slight rise of ground between the two places. If the case of Mr. Haines alone was to be accounted for, the explanation might be found in the fact that Mr. Haines carried water from the drain which passes below his house, and into which the drain from the Davis lot empties, and with it he watered the plants in his garden. This, however, would leave the four remaining cases unaccounted for. It is perfectly evident, however, with regard to this spring, that contamination with the contents of the privy-vaults, situated on the hill just opposite, might, and probably does, take place. But there is no history of typhoid fever in any of the houses on the hill. The connection, therefore, between these five cases and a former case of typhoid fever is not completely established, but that such connection exists I have no doubt. Two specimens of this spring water, obtained on different days, have been submitted for analysis, and both show unmistakable signs of animal organic matter, though in less quantity than any of the well waters. Specimens of water from two other wells in the town were examined, one from the well located in the lower part of the town, and known as the Dolan well, and the other from the Lewis well, in the neighborhood of Mr. Haines.' These specimens showed a greater amount of animal organic matter than any of the others, and that from the Lewis well the greatest of all. I would, therefore, strongly recommend the complete destruction of these wells. I also recommend that the use of the spring water be prohibited.

Now, as to the water of your hydrants, I find that no one who used hydrant water exclusively has, as yet, taken the disease. Specimens of this water were submitted for examination. A mere trace of organic matter was revealed, but, whether it was animal or vegetable in its origin, it was impossible to determine. It did not yield to the tests for animal matter. This water I would pronounce as practically, though not absolutely, pure. It is not quite as pure as Laurel Run water, as obtained in the Wilkes-Barre hydrants; but, of all the specimens obtained in Sugar Notch, this was by far the freest from impurities, and I regard it as reasonably safe to use.

I would also report that I visited the reservoirs of the water company, and found that measures were being taken at all points to prevent, as far as possible, future contamination of this water. At the upper reservoir I found a house situated on its banks, and it must be confessed that the condition of the old privy-vault was anything but desirable. I found, however, that a new pit was being blasted in the rock, and when this is completed the water will be reasonably secure from contamination. I learned, also, that similar precautions were being taken in regard to the vaults in a little place known as Dublin, and situated on a stream which empties finally

into the reservoir. When these improvements shall have been completed, I believe the quality of the water supplied to the town from that source will be excellent.

In regard to any sanitary measures which I might feel called upon to recommend your honorable body to adopt, with the view of stamping out the disease, I find myself anticipated on every hand by your actions. I believe that the energetic and efficient measures which you have instituted for the arrest of the scourge will be successful. Should no new cases be developed, I have no hesitation in saying that that very desirable result will be owing to the prompt and efficient measures adopted by you and the good citizens of your town, with that end in view, and your example will become a pattern for other corporations to follow in similar emergencies.

The value of the above reports cannot well be over-estimated as an evidence of what may be done by the active and intelligent efforts of borough councils and citizens acting in concert, in stamping out an incipient epidemic, and is the better appreciated when contrasted with the tardy and irresolute action of the authorities of ill-fated Plymouth. It is true that, in the latter case, the suddenness of the outburst was such as to inaugurate a panic and paralyze defensive effort. This only proves the necessity for wisely taking steps to put all persons into a good sanitary condition, and organizing measures in advance for meeting such emergencies when they arise.

B. L.

APPENDIX D.

REPORTS OF INSPECTIONS.

1. Report of an inspection of Nuisances Existing outside the Limits of Allegheny City and on the Pollution of the Allegheny River. Secretary.
2. Report of a Sanitary Inspection of Camp Muhlenberg. Secretary.
3. Report of a Sanitary Inspection of Camp Gallagher. President.

REPORT ON NUISANCES EXISTING OUTSIDE THE LIMITS OF ALLEGHENY CITY, AND ON THE POLLUTION OF THE ALLEGHENY RIVER.

The following communication was referred to the Committee on Water Supply, Drainage, Topography and Mines, by the Secretary of the Board, for action, July 15, 1885:

CITY OF ALLEGHENY, PA., *July 14, 1885.*

To the Secretary of State Board of Health, Pennsylvania:

DEAR SIR: The Committee on Health of our city have had under consideration the question of abating a nuisance, caused by parties living outside of the city limits, depositing offal, garbage, and refuse of various kinds in the stream known as Butchers' Run, which offensive matter flows down into our public sewer and causes a very serious nuisance; and, at a meeting held last evening, I was instructed to call your attention to the matter, and request you to visit our city and investigate, and recommend to the committee what action should be taken to remedy and abate the nuisance.

Yours respectfully,

R. T. WHITE,
Chief Clerk.

Report.

TO BENJAMIN LEE, M. D.,

Secretary of State Board of Health:

The Committee on Water Supply, Drainage, etc., has the honor to report that, in accordance with the request contained in the above communication referred to them by yourself, the committee, consisting of Rudolph Hering, C. E., chairman, Dr. J. H. McClelland, and Dr. Benjamin Lee, on the 18th day of September, visited the localities known as Spring

Garden Run and Butchers' Run, under the guidance of the health committee of the councils of Allegheny. On both of these runs they found large numbers of slaughter-houses, bone-boiling establishments, soap factories, manufactures of fertilizers, tanneries, etc., discharging their refuse into open runs full of stagnant pools, and offensive in the extreme. The principal sources of contamination to the atmosphere are slaughter houses, inasmuch as they deposit offal, entrails, etc., in large masses, which lodge in pools and crevices during periods of drought, and undergo putrefaction under the direct rays of the sun, causing a pestilential stench. On arriving at the city limits these open runs become closed sewers, and cease to contaminate the air. The most important of the fertilizer works is that of Dr. E. L. Czarniecki, fall-master of Pittsburgh, who has furnished, at the request of the committee, the following description of his mode of treatment of dead animals:

PITTSBURGH, *September 23, 1885.*

DEAR SIR: In compliance with your request, I would inform you that, upon receiving notice from the health office, my wagon is dispatched to the place where the carcass is and conveys it to my works, where it is skinned and quartered, then put into a boiling tank and covered with cold water until the tank is full. The manhead is then closed and steam turned on by way of a false bottom in the tank and allowed to remain on for about five hours. An escape pipe is connected to the tank on top, which runs down to the furnace beneath the boiler, where all the odor is consumed. After the steam has been applied a sufficient time, the tank is allowed to cool, after which the upper manhead is removed and all the grease is taken off, then the water is drawn off, the lower manhead is opened, and the meat, bones, and hoofs are hooked out and separated.

The meat goes direct to the steam dryer, where it is dried and ground. The dryer has a pipe attached which carries all moisture and odor to the furnace. After drying sufficiently, it is placed in piles for use as fertilizer. The bones, which are free from all meat, are, when dry enough, ground to a powder and sold to farmers as bone-meal.

Should live stock be given me to kill, I catch the blood and put it into the vats and treat it with acid, thus staying all decomposition. My chief effort is to obtain the stock as soon as possible after death, and thus save as much ammonia as possible, as it is of great value in all fertilizers, and also to do away with as much stench as possible.

To do this, I work both day and night. On Sunday I do only that work which is absolutely necessary, such as hauling the carcasses from the streets or stables and preparing them, as before stated, by skinning, quartering, and placing them in the tank, where they are covered with cold water. I have two of these tanks, which are air-tight, and when one is boiling the other is being filled, thus enabling me to handle the stock without any delay.

By the above, you will notice that all carcasses are converted into a commercial product within a very short time after their receipt by me.

The Boards of Health of Pittsburgh and Allegheny require the owners of dead animals to report them to the Board of Health at once, as they do not wish me to haul the carcasses through the cities in a decayed condition. If you have any suggestions to make, please do so, as I would like to know if there is any way in which I can improve on the method which I have explained above.

Respectfully yours,

E. L. CZARNIECKI.

To BENJAMIN LEE,

Secretary State Board of Health, Philadelphia, Pa:

From the extreme care taken in this process from beginning to end, and the fact that no solid refuse of any kind is allowed to find its way into the run, the committee are of the opinion that no serious cause of disease exists at these works. Others of a similar character, however, are not managed with the same scrupulous regard to the purity of the atmosphere and the prevention of nuisance.

The most effective and satisfactory way, and at the same time the least expensive one, of abating the above nuisances, will be the extension of the present sewers from the city line to the highest points in the respective valleys where the streams are now polluted. It would be a difficult if not an impossible task to compel the parties draining into the brook to purify the liquid refuse from their establishments before its discharge, as the daily amount is too large to permit of an economical method of treatment. The expense would be greater than the interest on the cost of the sewer. All solid refuse of an offensive kind, however, should be either buried or carted away from the valley.

The sewer, as proposed, need not be as large as the one into which it would discharge at the city line. If the foul waters were diverted from the creek, the latter would lose its offensive character and could, therefore, readily remain an open channel to receive and carry off the storm water as heretofore. The sewage alone, if intercepted and carried off in a separate pipe, would require the latter to have only one tenth to one twentieth of the capacity otherwise required, thus reducing the cost to about $10,000 per mile. A separate removal of sewage is entirely practicable and followed by no objectionable results, provided the works are properly designed and built, and provided they receive an occasional inspection and flushing.

The size of the sewer, which should be of vitrified clay pipe, would be about eighteen inches at its lower and twelve inches at its upper end. Its alignment and grade should be as even and regular as possible, and manholes for inspection should be built every three or four hundred feet. At the upper end suitable provision should be made for flushing the pipe when required with the water from the brook, which, in the dry months, would require a slight damming to allow a sufficient quantity of water for flush-

ing to accumulate, and in this way the sewer could be kept free from deposit.

If, at a future time, it should appear advisable to cover the brook, it could be done at a less expense than if a regular sewer were built, because it could be left at its present shallow depth, requiring much less excavation, and because its interior construction would be less expensive than if foul water were to be carried away.

The practical difficulty in carrying out this suggestion, the committee understand to be that in both instances these foul runs lie, in whole or in part, outside of the city limits of Allegheny, and, therefore, beyond the control of its health authorities. The committee, would therefore, suggest that the authorities of the townships and of the county in which these nuisances exist be informed by the Committee on Health of councils of Allegheny of the fact that the State Board of Health, acting through the committee and its executive officers, declares the condition of things above described to be a public nuisance, detrimental to the health of said townships and of the city of Allegheny, and also of the means which the Board proposes for their abatement, and that said authorities be invited by the said committee to coöperate with them in the construction of the necessary lines of sewerage above described. The committee also suggests that the proprietors of all rendering, fertilizer, bone-boiling, soap-making, and other similar works be furnished with a copy of the inclosed regulations for reducing the offensive character of their works to a minimum and preventing them from becoming a source of disease. If, after a reasonable time has elapsed, the said authorities and said proprietors take no steps to comply with these suggestions and regulations, the committee request the Health Committee of councils of Allegheny to notify the Secretary of the Board, when legal measures will be adopted to compel acquiescence in its decisions. On the following day, September 19, the committee, accompanied by a representation of the Health Committee of councils, City Engineer Ehlers, Superintendent of Water Works Armstrong, J. H. Wright, M. D., city physician, Health Officer Harlam, and other officials, made a tour of inspection of the right bank of the Allegheny river with a view of determining whether the water-supply of the city, which is taken from this river at a point directly opposite the center of this city as well as of the greater city of Pittsburgh, lying opposite, is in danger of becoming so contaminated as to be a source of disease.

After visiting the pumping-works and noting the position of the influent pipe, the first point of inspection was the stock-yards on Herr's island. While not as yet a source of pollution to the river, because they have not occupied the site long enough for the ground to be infiltrated with their drainage, it is evident that, unless means are taken by the proprietors to make their floors quite impervious to moisture, they may become so at no very distant day. The proposed arrangements for the removal of offal and

manure are all that can be asked, but it will need the supervision of the health authorities to see that they are faithfully carried out.

Within the city limits, at least six sewers were found discharging their noisome contents, under the burning September sun, directly into the river above the mouth of the influent pipe. Some of these, such as the Troy Hill sewer, for instance, drain a large territory, receiving the contents of water-closets and privies, and all have manufactories of different kinds located along their course. Following up the river after leaving the city, this bank presents a remarkable conformation, rising abruptly to the height of several hundred feet. The German and Swiss settlers have terraced the ground, until it recalls vividly the vineclad hills of Rhine, in the vain hope of obtaining a profitable yield of wine. This abrupt wall is cut through at short intervals by deep chasms and narrow valleys, which, whenever they are sufficiently long and broad, support a dense population, and afford sites for numerous mills and factories. All the drainage, of every kind, of these inter-vales finds its way more or less directly into the river; at three points these settlements swell to the proportions of populous boroughs,—Millvale, Etna and Sharpsburg,—each having or contemplating its own system of sewerage, of which the river is, of course, the ultimate outflow. This condition of things continues for at least six miles uninterruptedly above the city. Your committee extended their inspection somewhat higher up to two of the public institutions of Allegheny City, which constitute the final source of pollution, about nine miles above the city. These are almshouses, including a large and well conducted insane asylum and workhouse. While on the spot, the committee took occasion to inspect these establishments and desire to testify to their thoroughly efficient management, good order, and discipline, as well as to their favorable sanitary condition and scrupulous cleanliness. Returning to the city, notice was taken of the sources of pollution on the opposite side of the river; no less than ten sewers were found above the influent pipe of the Allegheny water works. Among these may be noted as especially likely to contaminate the water the Forty-second street sewer, which receives the drainage and sewerage of the St. Francis hospital, and the Thirtieth street sewer, which performs a like office for the West Penn hospital, both institutions liable at any time to contain cases of typhoid fever and other infectious diseases, the Thirty-third street sewer, which drains Skunk Hollow, appropriately so named from the large number of filthy slaughter-houses which it maintains. These are sewers varying all the way from twenty inches to eight-by-ten feet in diameter. A proposed extension of the system of the East Liberty Valley will throw the drainage of eighteen hundred acres into the Thirty-third street sewer, while twenty-five hundred acres will find an outlet with the stream through Negley's run. The completion of the great dam built by the United States Government for the improvement of navigation at Davis's Dam, some miles below the city, is expected to back the water up as far as Sharpsburg. This will, of course, render the current of the river even

more sluggish than at present, and greatly conduce to a distribution of the sewer contents throughout the entire almost stagnant pool. The sewers below the mouth of the influent pipe will then not be free from imputation of polluting the water as they now do the air. Add to this the piles of garbage which are festering on the river bank, and the picture of the future is not a pleasing one. The committee returned from this tour of inspection filled with amazement at the fact, that with all these multiplied and horrible sources of pollution, the water supplied the citizens of Allegheny should, except when thick with mud during freshets, be a not unpalatable, and, so far as indicated by the average low rate of mortality in the city, a not unwholesome beverage. There are four reasons which account to some extent for this astounding paradox:

First. The position of the influent pipe far out in the middle of the stream, where it receives principally the pure water from the upper Allegheny, with comparatively little admixture of the filthy currents which hug the shores.

Second. The construction of the influent pipe, which is sunk down below the river bed, and covered over with railroad iron laid close together and piled up to considerable height. On top of this the fine gravel has deposited to the depth of many inches in a compact mass, forming a filter of considerable effectiveness.

Third. This stream, fed from the mountains and hemmed in between its precipitous banks, is liable to frequent and tremendous freshets which wash it out thoroughly several times a year, leaving no trace of offensive material behind them.

Fourth. The various tanneries, chemical works, iron mills, and oil refineries contribute material, which, while not in itself wholesome or desirable as an addition to drinking water, yet serves to antagonize and precipitate a considerable extent, to, the organic filth. Can these conditions be relied upon to protect the water-supply of these eighty thousand souls in the future? Manifestly not. They are precarious and untrustworthy in the extreme. The inhabitants of this beautiful city are slumbering in fancied security over a mine. It wants only the spark which a single case of cholera or a mild epidemic of typhoid fever in any one of the clustered villages or boroughs above would afford to ignite the fuse and produce an explosion of disease which might number its victims by thousands, and utterly paralyze her teeming industries.

The question of a better water-supply, in its main features, clearly resolves itself into the following answer:

The Allegheny river is the only practicable source of supply for many years to come. The growing population, and the extension of the industrial institutions in the valley between Allegheny City and Sharpsburg, require either that intercepting sewers should be built, one on each side of the river, as far up as objectionable waste-waters enter it, or that the water should be brought down from above such points. The latter is the better plan to

adopt, because the rain-water, which could not be intercepted, would always wash such objectionable waste-water matter into the river from the built-up and inhabited areas between the present pumpage station and Sharpsburg. If the water is taken higher up the river, it willl be necessary to remove the pumping station to such a point, and it will be advisable to build settling-basins in the neighborhood sufficiently large to furnish the city with water for several days, or perhaps a week. Such basins would make it possible to suspend pumping after a rain-storm, when the river brings down muddy water and surface-washing, until the same had returned to its natural condition.

The plateau back of the sites of the alms-house and work-house would probably afford ample space for a reservoir large enough for the necessities of the city for a century to come, with an elevation which would carry a strong head of water to every portion of the town, and it would have this advantage—that the pumping-works and influent pipe could be placed above these populous institutions, thus avoiding the highest source of pollution and insuring perfect purity in the water.

Respectfully submitted.

RUDOLPH HERING,
Chairman,
BENJAMIN LEE,
Secretary.

REPORT OF A SANITARY INSPECTION OF CAMP MUHLENBERG.

Commonwealth of Pennsylvania,
State Board of Health,
Philadelphia, *July 31, 1885*.

General George R. Snowden, *Commanding Camp Muhlenberg*.

General: On behalf of the State Board of Health, and especially of my colleague, Dr. Pemberton Dudley, and myself, I desire to thank you for the courtesies extended to us by yourself and the officers of your command during our visit of inspection to Camp Muhlenberg yesterday. The subjects of our inspection were the water-supply of the camp—its amount and purity—the character of the food and amount of ration; the disposal of garbage; the latrines; the general police of the company streets; the size and ventilation of the tents and the accoutrements as affecting the health.

From a practical experience of some extent during the war, I am able to say with confidence that an encampment has rarely been seen in which all the details of military hygiene have been observed with more scrupulous and conscientious fidelity. The springs are abundant and pure, and are under guard day and night. All offensive matters are deeply buried, and, if necessary, disinfected, or removed at once from the camp. The streets and

tents are models of neatness and cleanliness. The result of this careful attention to sanitary precautions is sufficiently evidenced in the remarkable fact that, notwithstanding the extreme heat which has prevailed since going into camp, your surgeons report only about one half of one per cent. of your entire command as unfit for duty from sickness. Such a result could only be attained by the constant vigilance of an energetic and thoroughly educated brigade surgeon, seconded by a willing and able corps of regimental medical officers. The matters which perhaps afford room for criticism are those for which neither yourself nor your staff are responsible, but in which the State errs on the side of parsimony in its provision for her patriotic sons, who give freely of their time and labor, and often of their means, in order to render themselves her efficient defenders. And, first, we would suggest that, in the matter of rations, a little more variety would be both allowable and beneficial. The food provided is sufficient in quantity and of good quality. Your medical officers insist on that. It will support life; but something a little more than that is needed, and if this were judiciously provided by the commissariat, the men would be less tempted to supply the felt want by indulging in the indigestible luxuries offered them by the sutlers, which all army surgeons recognize as a fruitful source of dyspepsia, colic, and diarrhœa. Secondly, the French fatigue cap, worn universally by officers and men, unquestionably invites sun-stroke. It does not even leave room on top of the head for the traditional cabbage-leaf. The sooner it is abolished and a rational substitute provided, the better. Thirdly, the tents are of an old pattern generally, insufficient in number, and without adequate arrangements for ventilation. Fourthly, it is questionable whether the men should be compelled to carry the heavy winter overcoat on a summer campaign. It is an unnecessary weight when strapped on the knapsack, and even more burdensome when worn, as it must be, in case of heavy rains. The average mind can see no good reason why a soldier, any more than a civilian, should wear his winter overcoat in summer, in our climate.

Congratulating you on the condition of your camp, and the efficiency of your command, I have the honor to be, general,

Yours, with sincere respect,

BENJAMIN LEE,

Secretary.

REPORT OF A SANITARY INSPECTION OF CAMP GALLAGHER.

Commonwealth of Pennsylvania,
State Board of Health,
Erie, Pa., *August 5, 1885.*

Dr. Benjamin Lee,

Secretary State Board of Health:

Dear Sir: Last Thursday, July 30, I received your telegram, and proceeded to Camp Gallagher and Conneaut Lake, over fifty miles from Erie, by railroad and steamboat, in Crawford county, Pennsylvania, and reached there the next morning. The camp consisted of six regiments of infantry—the Fifth, Tenth, Fourteenth, Fifteenth, Sixteenth and Eighteenth, who had their tents on a hill along the lake, battery B, of Pittsburgh, and the Tyrone Cavalry Troop, finely mounted, who stood across a great open field used as parade ground on the edge of the woods.

The six infantry regiments, the battery and cavalry, formed the Second brigade of the Pennsylvania National Guard, commanded by General Beaver, and a healthier, livelier set of men never took the field. The lake at the foot of the camp is a beautiful sheet of fresh water—not polluted by the sewage of any city or village. Three small steamers ply upon it. The lake is about four miles long, two miles wide, and some fifty feet deep; in the woods around the lakes you see cucumber, oak, chestnut, hickory and pine trees. On the upper part of the lake, shell marl forms the bottom. Near the Evansburg depot there is an outlet of the lake, which was formerly used to feed the Erie and Pittsburgh canal. The lake is situated in two townships of Crawford county, Summit and Sadsbury. It is mentioned already in a French officer's report for the year 1729, and was navigated by the French and Indians.

Near Fairpoint the lake water was pumped with an engine, and distributed be iron pipes all over the camp; it was a little warm, but tasted well, and there was plenty of ice on hand to cool it. There are half a dozen big ice-houses near Evansburg supplying the city of Pittsburgh and other places with pure ice.

The soldiers had fine weather, with the exception of one day, when it rained several hours. They had excellent tents with wooden floors, and straw beds and good clothing. The streets of the camp were kept clean, the kitchen offal was buried after each meal in deep holes, and the privies were kept like earth closets. No beer or liquor was sold in the camp. There were three surgeons to each regiment, and a brigade surgeon, Dr. Miller. Outside of the camp, near Oakland landing, there was a patent roller-coaster in almost perpetual motion, a pile of farmers' teams, and any amount of camp followers with ice-cream, coffee, sausages, segars, ginger ale, and circus lemonade.

The days were hot and the nights quite cool, and at the commencement many soldiers were taken sick, some overpowered by the heat, others suffered from vomiting and diarrhœa. Many causes were assigned for this—the lemons, oranges, water-melons, cucumbers, and the beer. After walking all over the camp, I went to the booths near the patent roller coaster and tested the lemonade and ginger ale, and looked suspiciously at the cucumbers and melons. "You had better hunt up the rotten Chicago meat which was furnished to the boys and made them all sick. The old wagon with the stuff stood in the neighborhood here and stunk fearfully," —said the circus lemonade seller. I followed this clue and found that the man was pretty correct in his views. I learned that they got on the first day a carload of Chicago beef. This was unloaded at Evansburg and taken in farmers' wagons over-land to the camp, where it was deposited and cut up in a stinking old barn, and thus became tainted by the heat and exposure. I did not see that meat myself, but know two men who handled it and know all about the meat business. Both say that the outside was soft, bad smelling, mouldy, and decayed, and not fit for use. One of the men, an excellent cook, used some of the frozen inside pieces as a roast and it tasted good, and sickened nobody. From ten pounds he threw about three pounds in the hole at the back door of the kitchen. Some of the cooks who used the meat for making soup were made sick by the stench, and the soldiers refused to eat their rations of it. The surgeons of the different regiments condemned the stuff.

While I was in camp on the last day, there was nobody sick in the hospital, but when I left with the steamer, a sick soldier was carried in a litter to the hotel near the depot at Conneaut lake, and was afterwards from there removed to a private house in Linesville. It was claimed that he was poisoned by lemonade standing for a long time in a tin can. From the brigade surgeon, Dr. Miller, and from the other regimental surgeons, I learned that they had a good many sick, and that the bad meat and some green new potatoes caused the trouble. The exact number of sick I could not learn, as the soldiers refused to go to the temporary hospitals, and some left for home in quite a feeble condition. From all that I saw and learned, the camp was kept in excellent order. There was good drinking-water and a fine bathing place for the men. There is no malaria around there.

But the food was spoiled by bad management, and this error serves simply to show how necessary it is to have in every camp a sanitary officer to look after the bodily welfare of the men. Any practical butcher or dealer in provisions could fill that place. It will not take long to paralyze the movements of a whole army if you feed them with tainted meat and other poisonous stuff.

In this case the mistake was discovered soon, and was easy to amend. There were plenty of fat cattle grazing in the vicinity. Before an enemy, such an error would be of serious consequence, and it is no wonder that

leaders of great armies, like the first Napoleon, once in a while became terribly excited, and made short work with contractors.

There were a splendid set of officers and men—over three thousand—in the camp.

Very respectfully yours,

ED. WM. GERMER.

APPENDIX E.

REPORTS OF QUARANTINE AND DISINFECTION.

1. Report on the Maritime Quarantine System of the State of Pennsylvania, Port of Philadelphia. Secretary.
2. Lake Quarantine at Erie.
3. Report on the Municipal Disinfecting Station and System of Philadelphia, Sanitary Committee of Philadelphia Board of Health.

THE MARITIME QUARANTINE OF THE STATE OF PENNSYLVANIA, PORT OF PHILADELPHIA.

ACTS OF ASSEMBLY.

Quarantine regulations.

1. Every ship or vessel coming from any foreign port or place, bound to the port of Philadelphia, between the first day of June and the first day of October, in every year, shall come to anchor in the river Delaware, as near the Lazaretto as the draught of water and the weather will allow, before any part of the cargo or baggage be landed, or any person who came in such ship or vessel shall leave her, or any person be permitted to go on board, and shall submit to the examination hereinafter directed.

29 Jan., 1818, § 4, 7, Sm. 9.

Vessels from foreign ports to be examined at the Lazaretto.

2. And if any master, commander, or pilot shall leave his station before the said Lazaretto, or if any master or commander shall permit or suffer any part of the cargo or baggage, or any person or persons arriving in such ship or vessel, from any port beyond the limits of the United States, to be landed on either shore of the Delaware bay or river, or suffer any person except the pilot, to come on board before such examination be duly had, and a certificate obtained as is hereinafter specified, the person or persons so permitting, and the person or persons so landed or going on board, (unless imminent danger of the loss of the vessel or lives of the crew shall render assistance necessary,) being thereof convicted upon indictment or prosecution under this act, by verdict, confession, or standing mute, in any court having jurisdiction of the offense, shall pay a fine not exceeding five hundred dollars, to be recovered and appropriated as is herein directed.

Penalty for communicating with the shore before obtaining health certificate.

29 Jan., 1818.

Duties of physician and quarantine master.

3. And it shall be the duty of the Lazaretto physician and quarantine master, so soon as any ship or vessel shall be anchored near the Lazaretto between sunrise and sunset, immediately, wind and weather permitting, to go on board the same, and there thoroughly examine, in such form and manner as shall be prescribed by the Board of Health, the said ship or vessel, the crew, passengers, cargo, and baggage on board the same, and to demand answers, under oath or affirmation, to be administered by either the said physician or quarantine master, who are hereby severally empowered to administer the same, to all such questions as shall be put to any person on board such ship or vessel touching the health of the crew and passengers during the voyage, and the nature and state of the cargo, as the Board of Health by their rules shall, from time to time, direct to be asked; but it shall be the duty of the person so examining on oath or affirmation, before he shall proceed therein, to make known to the person interrogated the penalty imposed by this act upon the person who shall give false answers under oath or affirmation to the questions proposed in such examination.

When health certificate to be given.

4. And if, upon such examination, it shall appear to the said physician and quarantine master that the said ship or vessel came from a port or place at which no malignant or contagious disease prevailed at the time of her departure that the persons on board such ship or vessels are free from every pestilential or contagious disease, (the small-pox and, measles excepted,) and that the said vessel has no malignant disease on board, either during the homeward-bound voyage or during her continuance in a foreign port, and they shall see no cause to suspect that the cargo or any part thereof is infected, they shall forthwith deliver to the master or captain of such ship or vessel a certificate of the facts in such form as shall be directed by the Board of Health.

When such certificate to be presented

5. And the said captain or master may, thereupon, proceed according to his destination, and shall present such certificate to the health office in Philadelphia within twenty-four hours after his arrival and safely mooring there.

When vessels to perform quarantine.

6. But if it shall appear upon such examination, that the ship or vessel came from a port or place at which a malignant or contagious disease prevailed, such vessel shall be detained at the Lazaretto for such time as the Board of Health shall deem necessary, not exceeding twenty days.

7. And the letter-bag of the vessel, when purified, and

such letters as the master, commander, or passengers shall think proper to write to their owners, consignees, or friends, shall be transmitted to the health officer in Philadelphia, who shall safely deposit the same in the post-office. Letter-bag to be transmitted to Board of Health.

8. And thereupon the Board of Health shall determine and direct what measures shall be pursued to cleanse the vessel and cargo, purify the clothing and baggage, and restore the health of diseased persons on board, which direction shall be carried into execution under the inspection of the Lazaretto physician and quarantine master at the expense of the master, owners, or consignees of the vessel and goods respectively, in such manner as by the said orders shall be directed. Vessels to be cleansed, etc.

9. *Provided always*, That wine, rum, salt, sugar, spirits, molasses, mahogany, manufactured tobacco, dyewoods, preserved fruits, and such other articles as the Board of Health shall by their general regulations specify and permit, may be conveyed immediately to the city in lighters. Certain goods may be immediately landed.

10. At the expiration of the said time, if it shall appear to the said physician and quarantine master, that no person has been sick with a malignant or contagious disease (the small-pox and measles excepted) on board said ship or vessel, either during the voyage homeward or during her continuance in a foreign port, nor any of the crew or passengers, or other person from on board such vessel during the performance of quarantine, and the said physician and quarantine master shall certify the said facts to the Board of Health, and that in their opinion the vessel, crew, cargo, and passengers may be safely suffered to proceed to the city, the said captain or master may proceed with the same according to his destination, unless the Board of Health shall deem it necessary to cause a further detention of the vessel or cargo, or of the crew or passengers, or of any baggage on board said vessel, in which case the same shall be detained until the Board of Health shall authorize the same to proceed and enter the city. At expiration of quarantine certificate to be given.

29 Jan., 1818.

11. And upon the arrival of the said captain or master at Philadelphia, he shall present the said certificate of the physician and quarantine master at the health office within twenty-four hours after his arrival. When to be presented.

12. But if, upon examination of any vessel by the said physician and quarantine master as aforesaid, or during the performance of quarantine by any vessel, it shall appear to the said physician or quarantine master that there has been any person sick on board the said vessel with any malig- When further quarantine to be performed.

nant or contagious disease, either during the voyage homeward or during the continuance of the vessel in a foreign port, or during the performance of quarantine at the Lazaretto, (or that any person on board such vessel has been affected with such disease,) then in such case, the vessel shall be detained such further time as the Board of Health may deem necessary.

Proceedings in such cases.

13. And the cargo and baggage, except such part thereof as, in the opinion of the Board of Health, may be supposed incapable of retaining infection, which said part may be transported to the city in lighters, shall, unless otherwise ordered and directed by the Board of Health, be unladened and thoroughly cleansed and purified, and the crew and passengers which were on board the said vessel, and the cargo and baggage on board the same, or any part thereof, except as before excepted, shall not be suffered to enter the city before the first day of October then next ensuing, without the license and permission of the Board of Health to that effect first had and obtained.

When vessels may take freight at Lazaretto.

14. *Provided, nevertheless,* That such ship or vessel, after she shall have been thoroughly cleansed and purified, if no malignant disease appear on board, may be allowed to take in freight at the Lazaretto by means of lighters and proceed to sea.

Penalty for deceiving health officers.

15. And if any master or captain or other person on board any vessel which shall be examined agreeably to this law shall not true answers make to all such questions as the Lazaretto physician and quarantine master or the said health officer or port physician shall ask agreeaby to this act, or the rules heretofore established, or which shall from time to time be established by the Board of Health in conformity with this act, or shall knowingly deceive or attempt to deceive the proper officers as aforesaid, in his answers to their official inquiries, he having been duly informed and apprised of the penalties imposed by this act on the person so offending, previous to his said examination by the person making such examination, such person for each and every offense, being thereof legally convicted, shall forfeit and pay a sum not exceeding five hundred dollars, to be recovered and appropriated as hereinafter provided and directed, and moreover shall be sentenced to imprisonment at hard labor for any term not less than one year, and not exceeding five years.

Penalty for neglecting to present certificate.

16. And if any captain or master of any ship or vessel shall neglect to present his certificate at the health office

in any case in which he is hereinafter directed so to do, within the time directed by this act, he shall forfeit and pay the sum of three hundred dollars, to be recovered and appropriated as hereinafter directed.

Or for refusing to comply with quarantine regulations.

17. And if any captain or master of any ship or vessel, or any other person on board the same, shall refuse or neglect to comply with the directions of the Lazaretto physician and quarantine master, which shall be made agreeably to this act or the regulations of the Board of Health, with respect to the detention of any ship or vessel or the landing from on board the same of any person or persons, or of any goods, merchandise, bedding, baggage, or clothing, or shall refuse to carry the same into effect, such person, for each and every such offense, shall forfeit and pay a sum not exceeding five hundred dollars, nor less than two hundred dollars, to be recovered and appropriated as is hereinafter provided and directed.

Ibid., § 5.

When vessels from domestic ports to be subject to quarantine regulations.

18. Any ship or vessel coming from any port or place within the United States, at which port or place the said ship or vessel had only called in or touched, upon her arrival from a foreign port or place, shall be liable and subject to all the rules, regulations, and restrictions of the preceding section of this act, and shall be examined and treated, as well the vessel itself, as the cargo, crew, passengers, and baggage on board, in the same manner as if such ship or vessel had directly arrived at the Lazaretto from a foreign port or place without having first touched at a port or place within the United States.

Vessels from domestic ports having foreign goods on board.

19. And all ships or vessels, as well vessels of war as merchant vessels, coming from any port or place within the United States and bound to the port of Philadelphia, between the first day of June and the first day of October in every year, and having on board any goods or merchandise the growth or produce of any foreign place or country, or any person or persons, bedding or clothing, from any foreign port or place, shall come to anchor opposite the said Lazaretto, and shall be examined by the said Lazaretto physician and quarantine master.

29 Jan., 1818.

When certificate may be given in such cases.

20. And if the captain or master of any such ship or vessel shall produce such satisfactory proof as the Board of Health shall in that case direct to be required, that the said goods or merchandise shall have been landed in the United States more than twenty days and are free from damage, and that the said vessel, bedding, clothing, and persons are free from the infection of any dangerous contagious disease,

(the small-pox and measles excepted,) then and in that case, the said physician and quarantine master shall give to the captain or master of such ship or vessel a certificate of the facts, permitting such ship or vessel to proceed to the city, which certificate the said captain or master shall present at the health office in Philadelphia within twenty-four hours after his arrival and safely mooring there.

Penalty for neglect to deliver certificate.

21. And if he should neglect so to do, being thereof legally convicted under this act, he shall be sentenced to pay a fine of ten hundred dollars, to be recovered and appropriated as is hereinafter directed and provided.

When such vessels to perform quarantine.

22. And if the said captain or master shall fail to produce such satisfactory proof, as aforesaid, of the wholesome state of said vessel, goods, merchandise, bedding, clothing, and persons, the said vessel, goods, merchandise, bedding, clothing, and persons shall be detained at the Lazaretto and shall be proceeded with in the same manner, and subject to the same orders and regulations, as are hereinafter provided and directed, in the case of vessels coming directly from a foreign port or place.

Penalty for passing Lazaretto without anchoring.

23. And if the captain or master of any such ship or vessel coming from any port or place within the United States, and bound to the port of Philadelphia, having on board any goods or merchandise, bedding, clothing, or persons as aforesaid, shall refuse or neglect to come to anchor opposite the Lazaretto, and shall pass the same with intent to proceed to the city without examination by, and certificate obtained from, the said physician and quarantine master as aforesaid, he shall, on conviction, forfeit and pay the sum of five hundred dollars, to be recovered and appropriated as is hereinafter provided and directed, and the said vessel, goods, merchandise, bedding, clothing, and persons shall be sent back to the Lazaretto, there to be proceeded with in such manner as the Board of Health, agreeably to this act, shall in that case devise and direct.

25 March, 1852, § 14. P. L., 181. Board of Health may suspend the foregoing section.

24. When, in the opinion of the Board of Health, the interests of the port of Philadelphia may require it, and it can be done without prejudice to the health of the citizens, they may suspend the operation of section five of the act of 1818, under such rules and regulations as the Board of Health may make on the subject.

29 Jan., 1818, § 6. 9 Sm. 13 Vessels from the Mediterranean.

25. Every ship or vessel coming from the Mediterranean shall be subject to a strict examination under similar regulations and penalties as are provided in the fourth section of this act.

When from port infected with the plague.

26. And if it appear that the said ship or vessel came from any place where the plague existed at the time of her departure, or has spoken with any vessel on board of which any person was affected with the plague, or if any person is affected with said disease on his arrival at the Lazaretto, or has been affected during the voyage, the said vessel shall not be suffered to proceed to the city, the cargo and baggage shall be unloaded and thoroughly cleansed and purified, and no part shall be suffered to enter the city without the permission of the Board of Health first obtained, and the crew and passengers shall perform a quarantine of not less than twenty days, nor more than forty, at the discretion of the Board of Health: *Provided, nevertheless*, That such ship or vessel, after she shall have been thoroughly cleansed and purified, may be allowed to take in freight at the Lazaretto by means of lighters and proceed to sea.

Persons and goods from foreign ports in which malignant diseases prevailed, not to enter the city, etc., at certain periods, without permission of the Board of Health.

27. Any person or persons, and all goods, merchandise, bedding, and clothing, arriving at any port or place within the United States, from any foreign port or place at which any malignant or contagious disease (the small-pox and measles excepted) prevailed at the time of their departure, or on any vessel in which any such disease existed while they were on board, the same are hereby prohibited from entering the city or county of Philadelphia, or the county of Delaware, (except the township of Tinicum,) at any time between the first day of June and the first day of October in any year, either by land or water, without permission of the Board of Health first had and obtained, under the penalty of five hundred dollars for each and every offense, and the forfeiture of all such goods, merchandise, bedding, or clothing, to be recovered and appropriated as is hereinafter directed.

§9 Jan., 1818

Persons and goods first landed at any other port to perform quarantine.

28. And that all goods, wares, bedding, clothing, and merchandise, seamen or passengers, landed from on board any ship or vessel belonging to the port of Philadelphia, at any other port of the United States, shall be subject to perform twenty days' quarantine previously to entering the city or county of Philadelphia, under the same penalty as in the fifth section, without permission first obtained from Board of Health.

Ibid., § 8.

No persons or goods from any place where malignant disease prevailed, to enter the city without permission of Board of Health.

29. No person or persons, goods, wares, merchandise, bedding, or clothing, from any port or place at which any malignant or contagious disease (the small-pox or measles excepted) prevailed at the time of their departure, or from on board any vessel in which any such disease existed

while they were on board, shall enter or be brought into the city or county of Philadelphia, at any time between the first day of June and the first day of October in any year, by land or water, without the permission of the Board of Health first had and obtained, under the penalty of any sum not exceeding five hundred dollars, for each and every such offense, and the forfeiture of all such goods, wares, merchandise, bedding, and clothing, to be recovered and appropriated as directed by the twenty-ninth section of this act.

Ibid., § 9. Board to regulate communication with places when malignant diseases prevail.

30. Whenever the Board of Health shall receive information that any malignant or contagious disease (the smallpox and measles excepted) prevails in any port or place within the United States, or on the continent of America, they shall make diligent inquiry concerning the same; and if it shall appear that the disease prevails as aforesaid, all communication with such infected port or place shall be subject to such control and regulations as the Board of Health may, from time to time, think proper to direct, and publish in one or more newspapers published in the city of Philadelphia.

All persons and goods therefrom to be subject to such regulations.

31. And thereupon, every person or persons, and all goods, wares, merchandise, bedding, and clothing from such infected port or place, and having entered and brought into the city and county of Philadelphia contrary to such regulations, shall be subject to the penalties and forfeitures provided by the next preceding section of this act.

All vessels therefrom to stop at Lazaretto.

32. And all vessels from such port or place, and bound to the port of Philadelphia, shall stop at the Lazaretto and be proceeded with in the same manner and under the same penalties and forfeitures as are provided in cases of vessels coming from foreign ports.

Persons entering the city therefrom to be detained as directed by the Board.

33. And every person or persons having entered or been brought into the city or county of Philadelphia, from such port or place aforesaid, shall also be conveyed by any person authorized by the Board to such place for purification as the said Board may appoint or direct for that purpose, and be there detained at the pleasure of the Board, any time not exceeding twenty days, and at the expense of such person or persons.

Proof may be requested from persons suspected.

34. And if the said Board shall have cause to suspect that any person or persons at the time within the city and county of Philadelphia have been at such infected port or place within fifteen days since such disease prevailed at such port or place next proceeding, the said Board may

lawfully require such person or persons to render such satisfactory proof at their place or places of abode during the same period. Proceedings in case of failure to make proof.

35. And if such person or persons neglect or refuse to render such proof, or fail in proving their residence, other than at such infected port or place, every such person shall be dealt with by purification and detention, as persons coming from such infected port or place.

Ibid., § 11. Physicians to compel vessels to be cleansed and to attend sick.

36. It shall be the duty of the Lazaretto physician, immediately on the arrival of any ship or vessel liable to be detained at the Lazaretto, in order to be cleansed and purified as aforesaid, to cause the sick, if any on board, to be removed to the building which shall be appointed by the Board of Health for their reception, and diligently and impartially, with his best skill, to attend upon and administer medical assistance to each and every sick person that shall be therein lodged, and generally to superintend and cause to be executed such orders and regulations as the said Board shall, from time to time, ordain for the government and management of the Lazaretto, and of the vessels, cargoes, and persons under quarantine.

29 Jan., 1818, § 12. How vessels to be moored at Lazaretto.

37. It shall be the duty of the quarantine master, immediately after the arrival and examination as aforesaid, of any ship or vessel liable to be detained at the Lazaretto for purification as aforesaid, to direct and cause such ship or vessel to be properly moored near the Lazaretto, at such distance from any vessel or vessels under quarantine as may prevent the communication of any infectious disease to or from the same.

Cargo, etc., to be purified.

38. And the cargo, bedding, and clothing, or any part thereof, contained in such ship or vessel, to be landed, cleansed, and purified under the direction of the Lazaretto physician.

Intercourse with vessels under quarantine to be prevented

Boats to be secured at night.

39. And it shall be the particular duty of the quarantine master to prevent any personal intercourse between the persons on board different vessels under quarantine; and for that purpose to take possession of and secure the boats of such vessel from sunset to sunrise of the succeeding day, until the respective terms of quarantine shall be completed, to preserve and enforce order and obedience to this act, and all such orders and regulations as the Board of Health shall, from time to time, ordain for the government and management of the Lazaretto, and the persons, vessels, and cargoes under quarantine.

Ibid., § 13.

40. It shall be the duty of the port physician, upon re-

ceiving information from the health officer or other person whomsoever, that any person or persons on board of any ship or vessel in the port of Philadelphia is, or are afflicted, or suspected to be afflicted, with any pestilential or contagious disease, or that there is great cause to suspect that the cargo, or any part thereof, contained in any such ship or vessel is infected with any such disease, the said physician, in either of the foregoing cases, shall visit and carefully examine such ship or vessel, and if he shall discover any sick person or persons on board any such ship or vessel, he shall thereupon have and exercise the authority to direct such sick person or persons to be removed to the said Lazaretto, or to some other place which may be specified by the Board of Health.

Duties of port physicians.

To report to Board of Health.

41. And the said physician shall, without delay, report the state of said vessels, cargo, and crew, to the Board of Health, who shall direct and determine how the crew, passengers, vessel, and cargo shall be disposed of and managed for the restoration of their health and purification.

To examine vessels not previously examined at Lazaretto.

42. And on the arrival of any ship or vessel in the port of Philadelphia, from any foreign port or place, from the first day of October in any year to the first day of June in the next succeeding year, it shall be the duty of the said physician, provided such a ship or vessel shall not have been previously visited and examined by the physician resident at the Lazaretto, and quarantine master, and before any of the passengers, crew, cargo, or baggage are landed, to visit and carefully examine such ship or vessel, in manner and form as the said Lazaretto physician and quarantine master are bound to do, and to demand answers, under oath or affirmation, to be administered by the said port physician, who is hereby empowered to administer the same in conformity with this act.

When to give certificates of health.

43. And if the crew, passengers, vessel, and cargo be in a healthy state, and if there shall be no ground to suspect that any of the crew or passengers have died on the voyage of any dangerous contagious disease, (the small-pox and measles excepted,) or that the cargo, bedding, or clothing is infected, then, and in such case, the said physician shall give to the master or commander a certificate of the facts, which the said master or commander shall present at the health office, within twenty-four hours after such examination; and if he shall neglect so to do, being thereof legally convicted under this act, he shall be sentenced to pay a fine of ten hundred dollars, to be recovered and appropriated as is herein provided and directed.

44. And if, on examination, any suspicion shall arise in the mind of the said physician, touching the health of the crew or passengers, or the infectious state of the vessel, cargo, bedding, or clothing on board, no part thereof shall be landed, but the said physician shall immediately report the same to the Board of Health, who shall direct and determine what measures shall be pursued relative thereto. To report in case of suspicion.

45. And every ship or vessel so, as aforesaid, arriving at the port of Philadelphia, shall be visited by the port physician previously to her being hauled to any wharf within the city or district aforesaid, or Windmill island. Every vessel to be visited by port physician.

46. And every captain, or other person, so hauling such ship or vessel to any wharf, as aforesaid, shall, for each and every offense, forfeit and pay the sum of two hundred dollars, to be sued for and recovered as herein provided, unless it shall be made appear by such captain, or other person, that there was at the time imminent danger of the loss of such ship or vessel, or of the passengers or crew thereof. 29 Jan., 1818. Penalty for hauling to before such visit.

47. It shall be the duty of the health officer, at seasonable and proper hours, on each day, (Sundays excepted,) to open and keep a public office at such convenient place in the city of Philadelphia as shall be directed by the Board of Health, whereat all masters or captains of ships or vessels shall deliver the certificate or bills of health to them granted by the Lazaretto physician and quarantine master, or port physician, as aforesaid. Ibid., § 14. Health office to be kept open daily.

48. And it shall be the duty of the said health officer to collect, recover, and receive all forfeitures and penalties imposed, and sums of money directed to be paid, by this act. Health officer to collect fines.

49. The letter-mail shall, during the quarantine season, leave the Lazaretto for the health office in the city of Philadelphia, and return, twice in each juridical day, at such hours as the Board of Health shall determine, and shall be free for the transmission of letters to and from persons who may be within the bounds of the Lazaretto, or on board of vessels which may be detained there. Ibid., §15. Letter-mail from Lazaretto.

50. And it shall be the duty of the health officer, immediately after the arrival of the Lazaretto mail, to deposit in the post-office the letters received thereby, excepting those which shall be addressed to the Board of Health and the officers connected therewith. Health officer to deposit letters in post-office.

51. Under the provisions of the fifteenth section of the act entitled "An act to establish a health office, and to secure the city and port of Philadelphia from the introduction of pestilential and contagious diseases, and for other 13 June, 1832, §1. P. L., 620.

purposes," passed the 29th day of January, 1818, the Board of Health of Philadelphia are hereby authorized to send letters and other packages to the Lazaretto and to Fort Mifflin, and to receive letters and packages sent from either of said places, to the health officer of said city, once or twice a day, as they may deem expedient.

Two mails may be sent daily to Lazaretto.

29 Jan., 1818, § 16. 7 Sm., 17.

52. Every diseased person duly landed, or sent to the Lazaretto, by either of the aforesaid physicians, quarantine master, or health officer, shall be there kept and maintained until the Lazaretto physician shall grant him, or her, a discharge in writing.

Sick persons to be maintained at Lazaretto.

53. And if, before obtaining a discharge, as aforesaid, any such person shall elope, or otherwise absent himself, or herself, from the Lazaretto, it shall be lawful for the health officer, or any constable, or other person, whom he shall call to his assistance, and they are hereby enjoined and required to lend such assistance to pursue and apprehend the person so escaping or absenting himself, or herself, from the Lazaretto, and there again to deliver him, or her, to be detained until he, or she, be duly discharged, as aforesaid.

Persons escaping to be apprehended.

54. And, moreover, the person so eloping or absenting himself, or herself, shall, for each and every offense, suffer such temporary confinement in the Lazaretto, not exceeding three months, as the Board of Health shall ordain and award.

Penalty for escaping.

55. And if any master or captain shall knowingly receive or employ on board of his ship or vessel, or if any housekeeper or other inhabitant of this Commonwealth shall knowingly receive, harbor, or in any way entertain any person so eloping or absenting from the Lazaretto, each and every master and captain, and each and every housekeeper or inhabitant so, respectively, offending shall, on being thereof legally convicted, forfeit and pay a sum of two hundred dollars.

Penalty for receiving and harboring persons escaped.

56. And if any person arriving in and belonging to any ship or vessel detained at the Lazaretto, as aforesaid, shall elope or absent himself, or herself, without having first obtained a discharge, signed by the Lazaretto physician and the quarantine master, or if any person other than those detained at the Lazaretto, as aforesaid, shall go on board, or alongside, of any ship or vessel whilst under quarantine, as aforesaid, or if any person, not authorized by the Board of Health, shall go within the limits of the Lazaretto, such person, or persons, shall perform such quarantine as the Board of Health may direct. The person so offending,

Penalty for eloping from vessels at Lazaretto, etc.

upon legal conviction of such offense, shall forfeit and pay the sum of two hundred dollars, to be recovered and appropriated as hereinafter directed.

57. And if any diseased or other person, landed or sent to the Lazaretto by any officer having authority to do the same, or any person arriving in or belonging to any ship or vessel detained at the Lazaretto, as aforesaid, shall refuse or neglect to obey the directions of the Lazaretto physician, or quarantine master, respectively, agreeably to this act and the order and regulations of the Board of Health, which shall, from time to time, be ordained and established for the government and management of the Lazaretto, and the persons, vessels, and cargoes under quarantine, the person so refusing or neglecting shall, for each and every offence, on being thereof legally convicted, forfeit and pay the sum of two hundred dollars, to be recovered and appropriated as hereinafter directed. 29 Jan., 1818. Penalty for refusing to obey directions of physician or quarantine master.

58. And the expense and charge of boarding, lodging, nursing, medicine, maintenance, and other necessaries, which shall have been provided for the diseased persons landed and sent to the Lazaretto, as aforesaid, and also of burying them, in case of death, shall be paid or discharged by the importer, master or captain, owner, or consignee of the ship or vessel, respectively, in which such diseased persons were, respectively, imported, agreeably to the rates in that behalf, by the Board of Health to be ordained and established: *Provided always, nevertheless*, That when the diseased persons are passengers, and not servants, the said expense and charges shall be repaid by them, their executors, or administrators, to the captain or master, owner, or consignee, who shall pay and satisfy, or be bound to pay and satisfy, the same, as aforesaid. By whom expense of sick at Lazaretto to be borne.

59. When any vessel shall come up to the city of Philaphia, or the shores of Southwark, or the Northern Liberties, although the said vessel may have obtained a certificate of health from the Lazaretto physician and quarantine master, or the port physician, if the said vessel shall appear to the Board of Health to be infected with any contagious disorder, dangerous to the community, the said Board are hereby authorized to order the said vessel to the Lazaretto, there to undergo the necessary purification before she will be permitted to return to the city, or the shores aforesaid. Ibid., § 17. Board may order vessels to Lazaretto, notwithstanding health certificate.

60. And the said Board are hereby authorized and empowered to remove any vessel, or vessels, from any part of the city, or shore aforesaid, as shall be infected with such Or remove them from place infected.

disorders, as aforesaid, to such convenient distance as they may deem proper, although such vessel may not be infected.

Ibid., § 19. Pilots not obliged to perform quarantine.

61. No pilot bringing a ship or vessel to the Lazaretto in an apparent state of good health shall be obliged to perform quarantine, but the Lazaretto physician shall grant such pilot a certificate permitting him to proceed to the capes of the Delaware, in order that he may prosecute his profession; but such pilot shall not, on any pretense, come into the city of Philadelphia, the Northern Liberties, the district of Southwark, or the townships of Moyamensing or Penn, for twenty days from the date of such certificate, under the penalty of one hundred dollars, or one year's imprisonment, which penalty shall be recovered and applied in the manner hereinafter directed.

But not to enter the city.

Pilot bringing up infected ship to remain at the Lazaretto.

62. And any pilot bringing to the Lazaretto a ship or vessel infected, or supposed to be infected, with any pestilential or contagious disease, may be permitted to go and remain on shore, within the bounds of the Lazaretto, during the time the ship or vessel brought thither shall be detained under quarantine: *Provided always*, That if the said pilot shall be infected with any disease, as aforesaid, he shall be detained and treated in the like manner as seamen or passengers so infected are herein directed to be detained and treated: *And provided further*, That if he shall go without the bounds of the Lazaretto, he shall be liable to the same penalties as are by this act imposed on seamen and passengers escaping therefrom.

Ibid., § 23.

63. Whenever the said Board of Health shall receive information that any contagious disease rages in any port, or place, within the United States, or on the continent of America, they shall make diligent inquiry concerning the same; and it shall and may be lawful for the said Board to prohibit and to prevent all communication, by land and water, with such infected ports, or places, by stopping all vessels coming into the port of Philadelphia, and at and before the Lazaretto, in the same manner, and under the same penalties and forfeitures, as are hereby provided in cases of vessels coming from foreign ports, and by stopping all persons coming from said infected places, in such manner as the circumstances and exigencies of the case shall require.

Communication with infected places in America to be regulated by the Board.

29 Jan., 1818.

2 April, 1821, § 1. Sm., 458.

64. Between the first day of June and the first day of October, every ship or vessel coming from any port, or place, southward of Cape Fear, bound to Philadelphia, shall be subject to the examination directed by the fourth section

of the act to which this is a supplement, for every ship or vessel coming from any foreign port or place.

Ships coming from southward of Cape Fear to be subject to examination.

65. And the master, commander, or pilot of any such ship or vessel coming from any port or place southward of Cape Fear shall be subject to the same restrictions, and liable to the same indictment, prosecution, and penalties as by the said fourth section of the said act is prescribed for the master, commander, or pilot of any ship or vessel coming from any foreign port or place.

Masters and pilots to be liable to the same restrictions.

66. And the same duties shall be performed by the Lazaretto physician and quarantine master, and the same oaths and affirmations shall be by them administered, first making known to the person interrogated the penalty imposed by the said act to which this is a supplement, which penalty is hereby extended to every person who shall give false answers, under oath or affirmation, to the questions proposed under the authority of this act.

Duties of physician and quarantine master

67. And the physician and quarantine master, and the master or captain of such ship or vessel, shall proceed in the same manner in all respects as is directed by the said fourth section of the act to which this is a supplement; and the Board of Health shall have the same power to determine and direct what measures shall be pursued, and the same shall be carried in like manner into execution.

Powers of Board of Health.

Ibid., § 2.

68. Between the first day of June and the first day of October, every ship or vessel coming from a port or place in the United States, bound to the port of Philadelphia, and from which ship or vessel shall have been, within thirty days next preceding, unladen the whole or part of the cargo or baggage brought in the said ship or vessel from such foreign port or place, every such ship or vessel shall be liable and subject to all the rules, regulations, and restrictions of the said fourth section of the said act to which this is a supplement, and shall be examined and treated, as well the vessel itself, as the cargo, crew, passengers, and baggage on board, in the same manner as if such ship or vessel had brought the same cargo, crew, passengers, or baggage directly from such foreign port or place, and had the same then on board at the Lazaretto.

Ships from domestic ports in which cargo from a foreign port has been unladen to examination at certain periods.

Ibid., § 3.

69. Between the first day of June and the first day of October, no ship or vessel which shall be laden with, or have on board, any vegetables, fish, or hides, shall be unladen at the port of Philadelphia, until a permit shall be applied for and obtained from the Board of Health.

Vessels laden with vegetables, etc., to obtain permits.

Penalty for unlading without permit.

70. And if any master, captain, owner, or owners, consignee, or consignees, or other persons, shall presume to unlade from on board any such ship or vessel, any vegetables, fish, or hides, without first having applied for and obtained a permit from the Board of Health, every such master, captain, owner or owners, consignee or consignees, or other persons so offending, shall pay a fine not exceeding five hundred dollars, to be recovered and appropriated as is directed in the act to which this is a supplement.

Ibid., § 4. Masters, owners, etc., to give notice of discharge of cargo.

71. Between the first day of June and the first day of October, within forty-eight hours after discharge of cargo of every ship or vessel at the port of Philadelphia, it shall be the duty of the captain or master, owner or owners, consignee or consignees, and other persons having the direction of the discharge of the same, under the penalty of one hundred dollars, to be recovered and appropriated as by the act to which this is a supplement is directed to give, or cause to be given, to the Board of Health, notice that the same cargo is discharged, and to permit and suffer the Board of Health by themselves, or by their lawful agent by them for that purpose appointed, to examine the condition of the hold, ballast, and timbers of such ship or vessel.

And permit examination of hold, etc.

Board may direct vessel to be cleansed.

72. And if the Board of Health shall deem it for the safety and health of the city of Philadelphia, they are hereby authorized and empowered to designate a proper place to which the said ship or vessel shall be taken, and that her hold, ballast, and timbers shall there be cleansed and purified, or at the expense of such captain or master, owner or owners, consignee or consignees, or other persons having the direction of the discharge of the cargo, to send, or cause to be sent, such ship or vessel to a proper place, and have her hold, ballast, and timbers cleansed and purified.

29 March, 1824, § 1. 8 Sm., 274.

73. All ships or vessels arriving at the port of Philadelphia with small-pox on board shall be subject to the same rules, restrictions, and regulations as are provided and directed in the act to which this is a supplement, in relation to ships or vessels arriving with other malignant or contagious diseases.

5 April, 1849, § 2. P. L., 346

74. The general health law passed on the 29th day of January, 1818, shall be taken and construed, as if the words "small-pox" had never occurred therein.

29 Jan., 1827, § 1. 9 Sm., 263.

75. A free and unrestricted communication is hereby permitted between the officers and crews of National vessels which may be detained at quarantine at the Lazaretto, in

the port of Philadelphia, and the naval asylum in the river Schuylkill, any provisions in the act to which this is a supplement to the contrary notwithstanding: *Provided*, That nothing herein contained shall prohibit the Board of Health from interdicting communication between the said asylum and the citizens of the city of Philadelphia, whenever, in their opinion, such interdiction may be necessary.

National vessels at Lazaretto to have free communication with naval asylum.

76. No vessel shall be permitted to leave the Lazaretto without first giving security, to be approved by the Board of Health, for payment of all expenses of said vessel, and of passengers and other persons imported therein, which said vessels, their captains, owners or consignees are by law made liable.

3 Feb., 1848, § 8. P. L., 19.

Vessels not to leave Lazaretto without security for expenses.

(2.) Health Fees.

77. The health officer on receiving from the captain or master of any ship or vessel the certificate, as directed by this act, or where no certificate is to be given on the arrival of the vessel, shall be entitled to receive from the captain or master the following sums and no more, and to pay the same over, from time to time, as the Board may direct, to the treasurer of the Board of Health, to wit:

29 Jan., 1818, § 2. 7 Sm., 7.

Fees for certificate of health.

78. All American vessels sailing under coasting documents arriving at the port of Philadelphia, from any port or place in the United States, between the river St. Croix and the river St. Mary (except ports or places between Sandy Hook and Cape Charles) shall pay two dollars and fifty cents for each arrival during quarantine months; and the said vessels, during that time, shall (if having goods capable of containing contagion, persons, baggage, or clothing from any foreign port or place, or any diseased person) stop at the Lazaretto, and there be examined by the Lazaretto physician and quarantine master, under the rules, regulations, and penalties in this act contained.

American coasting vessels from domestic ports between the river St. Croix and river St. Mary during quarantine months.

79. And all American vessels from any port in the United States, where they may have touched or traded from a foreign port or place, shall pay the sum as if they had arrived direct from such port or place.

American vessels from domestic ports, where they have traded from a foreign port.

80. And all American vessels, with coasting documents, arriving from any port or place between Sandy Hook and Cape Charles, including the bay and river Delaware, during quarantine months, having on board merchandise of foreign growth or manufacture, or persons, baggage, or clothing, from any foreign port or place, or from any place to the northward or eastward of Sandy Hook, or westward of

American vessels from between Sandy Hook and Cape Charles.

Cape Charles, shall stop at the Lazaretto for examination, under the rules, regulations, and penalties in this act contained; and shall pay for each arrival, during quarantine months, two dollars and fifty cents.

American vessels from other American ports.

81. All American vessels arriving from any port or place in New Brunswick, Nova Scotia, Canada, or the islands or ports adjacent the river St. Mary, the coast of Florida, bay of Mexico, including New Orleans and other ports adjacent, and from thence along the bay of Honduras and coast of Terra Fimra, as far as the river Amazon, including all the islands generally denominated West Indies, Bahamas or Bermudas, shall pay on arrival five dollars.

American vessels from Europe, &c.

82. All American vessels from any place in Europe, in the western Madeira, Canary, or Cape Verd islands, the west coast of Africa, as far as latitude thirty-four degrees south, and from any place in the Mediterranean or straits thereof, or from any place from the river Amazon inclusive, and around the coast of Brazil, as far as latitude thirty-four degrees south, shall pay ten dollars each.

American vessels from other foreign ports.

83. And all American vessels arriving from any place beyond latitude thirty-four degrees south, or around Cape Horn or the Cape of Good Hope, shall pay twenty dollars each.

Foreign vessels.

84. And all foreign vessels arriving as aforesaid (except prizes to American vessels) shall pay twenty-five per cent. each, additional, unless otherwise regulated by any treaty.

Prizes.

85. And prize vessels taken by foreign armed vessels shall pay twenty-five per cent. each more than is paid by American vessels.

Public armed vessels.

86. And prize vessels taken by American vessels shall pay on arrival ten dollars each. And public armed vessels and privateers shall pay six dollars each.

29 Jan., 1818.

Vessels may come to in the outer channel.

87. And any vessel of the burthen of one hundred and fifty tons and upwards, arriving at the Lazaretto from any foreign port or coast-wise, may come into the outer channel, as near to the west end of the island of Little Tinicum, opposite the Lazaretto, as her draught of water, wind, and weather will permit, for the purpose of receiving the visit from the Lazaretto physician and quarantine master.

Additional fees in such cases.

88. And if the said vessel does not receive her visit in the inner channel, she shall pay an additional sum of five dollars, of which two dollars shall be paid to the Lazaretto physician, and one dollar to the quarantine master, as a compensation for their extraordinary services, and two dollars shall be paid into the treasury of the Board.

25 March, 1870, §4. P. L., 268.

89. For the purpose of more effectually securing the city and port of Philadelphia from the introduction of pestilential and contagious diseases, every ship or vessel arriving from a foreign port shall, in addition to the visitation and examination now prescribed, be visited by the Lazaretto physician before passing the Lazaretto, or the port physician before being hauled to any wharf within the city or port of Philadelphia, and such Lazaretto physician or port physician, as the case may be, shall rigidly examine the baggage, effects, and property of the passengers and crew, for which service he shall then receive and pay over to the Board of Health the sum of fifty cents for each and every person on board such vessel: *Provided*, That in advance of such visit and payment of money, and in lieu thereof, the Board of Health may take security from the master, owner, or consignee of the vessel, or importer of, or agent for, the passengers, conditioned for the payment of all such sums immediately on the arrival of such ship or vessel at the city and port of Philadelphia; and if any master, pilot, owner, or consignee of such ship or vessel, or any other person, shall bring, or cause to be brought, such ship or vessel from the Lazaretto, or haul, or cause it to be hauled, to any wharf, before paying such moneys, or giving security, as aforesaid, he, or they, so offending shall, for every such offense, forfeit and pay to the Board of Health the sum of five hundred dollars, to be recovered as penalties of like amount are now by law recoverable.

Vessels to be subject to additional visitation.

Fees.

Board may take security therefor in advance.

Penalty for hauling to without payment or security.

(3.) Miscellaneous Provisions.

29 Jan., 1818, § 28. 7 Sm., 24.

90. If any person shall willfully and knowingly obstruct or resist the Board of Health, or any of the members thereof, or any person by them appointed, in the execution of the powers to them given, or in performance of duties enjoined on them by this act, and the rules and regulations of the said Board, such person shall, upon being thereof legally convicted, forfeit and pay a sum not exceeding five hundred dollars, to be recovered and appointed as is hereinafter directed.

Penalty for obstructing Board of Health.

91. And if, after the expiration of quarantine, any mariner or other person who shall have complied with the regulations hereby established, shall commit any violence on the person of a member of the Board of Health, or any of the officers attached to the same, for anything done in the execution of his duty, such person shall be subject, on conviction thereof, to a fine of two hundred dollars, and shall

For assaulting members or officers.

also be sentenced to imprisonment, at hard labor, for any term not exceeding three years.

Ibid., § 29.

How penalties to be recoverable.

92. For payment and satisfaction of all forfeitures and penalties which are imposed by this act, and all sums of money directed by this act to be paid, it shall be the duty of the health officer to sue and prosecute and the same to collect, recover, and receive; and the same shall be recoverable before any alderman, justice of the peace, or court of justice having lawful jurisdiction, to the amount of such forfeitures, penalties, and sums of money, respectively, or in the case, or upon the offense upon which the proceeding shall be had; and the same, when recovered and received, shall be appropriated and shall inure to the use of the institutions under the management and direction of the Board of Health.

No citizen to be disqualfied as a witness.

93. And no citizen or inhabitant of the city of Philadelphia, the district of Southwark, or the townships of the Northern Liberties, Moyamensing, or Penn, shall be disqualified from sitting as judges or jurors, or from giving testimony respecting any of the offenses mentioned in this act, by reason of his, her, or their common interest in the appropriation of the sum or penalties imposed for such offense, nor shall any member of the Board of Health, or any officer intrusted with the execution of this act, or any part thereof, be disqualified from giving testimony respecting any of the said offenses.

Ibid., § 31.

Limitation.

29 Jan., 1818.

94. All actions or prosecutions to be commenced against any master, captain, owner, or consignee of any ship or vessel, or other person, by virtue of this act, shall be brought within twelve months next after the commission of the offense wherewith he is charged; and if any action or suit shall be commenced against any person, or persons, for any matter or thing committed in violation of this act, the defendant, or defendants, may plead the general issue, and give this act and special matter in evidence at any trial to be had thereupon.

Who to be liable parties.

95. And for the payment and satisfaction of all forfeitures and penalties which are imposed, and all sums of money directed by this act to be paid by the master, captain, owners, or consignees, as well the ships or vessels, respectively, as the captains, masters, owners, or consignees thereof, shall be, and are hereby declared, liable.

3 Feb., 1848, § 2. P. L., 18.

96. Whenever any penalty given by law to the Board of Health is not fixed and definite in amount, but varies at the

discretion of the court, the same shall, in such cases, be collected and recovered only by indictment.

97. All steamers trading to and from other ports, both foreign and coast-wise, and all sailing vessels of over twenty-five tons' burden, either by canal or sea, excepting ports in Pennsylvania, Delaware, and New Jersey, shall pay the same harbor master's fees that sailing vessels are now required to pay: *Provided*, That not more than one hundred dollars shall be paid in any one year by the owners of any line of steamers for harbor master's services.

7 May, 1855, § 1. P. L., 491.

Steamers to pay harbor master's fees

Limitations.

RESUME

Of such of the rules of the Board of Health of Philadelphia for the management of the Lazaretto as affect the enforcement of quarantine more or less directly :

LAZARETTO COMMITTEE.

XXI. The Lazaretto shall be under the management of the Lazaretto Committee.

XXII. The committee shall, at their first meeting, elect from among its own number, a secretary, who shall keep a full and accurate record of its proceedings.

XXIII. They shall hold stated meetings monthly, and special meetings as often as occasion may require.

XXIV. Previously to the first of October in each and every year, the committee shall elect one pilot, one engineer, and a crew of four men, to serve during the ensuing year, and report the same to the Board at the next stated meeting.

XXXI. The monthly accounts of the health officer shall, when presented to the Board, be referred to the Committee on Accounts; and in the adjustment and settlement of the same, the committee shall compare the said accounts for each month, from the first day of June to the first day of October annually, with the bills of inquiry transmitted to the Board by the Lazaretto physician, with the monthly list of vessels permitted up by the Board without bills of inquiry, and with the monthly list of coasting vessels, the health fees of which have been paid to the agents of the Board; and from the first day of October to the first day of June annually, the Committee on Accounts shall compare the accounts of the health officer with the monthly list of vessels visited by the port physician, and the inspectors' list of vessels subject to health fees, but not liable to a visit from the physician of the port.

XLVI. He shall, whenever the Board shall direct him to have a vessel sent down to the Lazaretto, see, and be certain, that the said order of the Board is immediately and strictly complied with.

INSPECTORS OF VESSELS.

CIX. It shall be the duty of inspectors of vessels to see that no hides, fish, or vegetables, or any sick person, is landed from any vessel, in either river, without a special permit from the Board of Health. They shall likewise demand and collect from the captains, owners, or consignees of all vessels arriving in either river during quarantine season, which are not required to stop at the Lazaretto, the health fee with which by law they are respectively chargeable, and pay the same over to the health officer weekly.

LAZARETTO PHYSICIAN.

CXX. The Lazaretto physician is declared to be the official head of the Lazaretto station, and all information respecting infractions of the rules and regulations of the station are to be made through him to the Board.

CXXI. During the entire quarantine season, the Lazaretto physician is required to confine himself within the bounds of the Lazaretto. On any important occasion, however, by application to the Board, a warrant for his absence, during a limited period, may be obtained. But the right will always be reserved by the Board to judge as to the propriety of his absence, and to refuse permission, under any circumstances, should they consider that such an absence would interfere with his official duties.

CXXII. In accordance with the health laws of 1818, the Lazaretto committee will hold the Lazaretto physician responsible for carrying out the quarantine laws, and for the general superintendence of the orders and regulations that have been, or shall be, ordained by the Board for the government of said Lazaretto, and vessels, cargoes, and persons under quarantine. All officers connected with the station are considered under his control, and all orders appertaining thereto will be forwarded through him.

CXXIII. He is required to hold himself in readiness to visit, without delay, all vessels that come to at the Lazaretto, between sunrise and sunset, whether in the inner or outer channel. No visit is to be delayed on any consideration whatsoever, provided the wind and weather will permit it to be made without danger to the boat and its crew.

CXXIV. On boarding a vessel, before administering to the captain the oath or affirmation required by law, the said physician shall assemble the crew and passengers on deck, and examine personally into the state of their health; such as may be sick, to be visited below. In this manner, he shall ascertain whether all on board are free from sickness, and correspond in number with the captain's statement.

CXXV. Such vessels as, upon a close examination, made in conjunction with the quarantine master, shall be ascertained by the said physician to have arrived from healthy ports, with healthy crews, to be in a perfectly clean condition, to have a sound cargo, not liable, should it be allowed to enter the city, to produce infection, and on board of which no person has died during the passage of any malignant, contagious, or otherwise suspicious disease, he shall at once permit up, giving to the master thereof a certificate of the facts, directed to the health officer. In every case, previously to permitting a vessel to pass up, he is required to ascertain that the bilge-water has been changed, by pouring fresh water into the pumps, and continuing to work them until nothing but pure water is discharged. No vessel whatever is to be permitted up until the bilge-water has been rendered entirely pure.

CXXVI. He shall detain at the Lazaretto all vessels not answering to the above description, and await the orders of the Board in relation to them. Sick persons, however, are to be landed without delay; ventilation

of the hold, cabin, and forecastle at once commenced, and all articles of an offensive nature taken from on board.

CXXVII. Whenever he shall have any doubt as to the propriety of permitting a vessel up, he may detain her until he receives orders from the Board.

CXXVIII. Great discretion and judgment must be exercised by the Lazaretto physician in deciding the question, as well of permitting up as of detaining vessels arriving at the quarantine station; for while it is important that nothing should be permitted to enter the city likely to create alarm or excite disease, as little interruption as possible must be occasioned to the commerce of the port.

CXXIX. In his inspection of vessels, the Lazaretto physician is required to be perfectly minute, strict, and accurate, inasmuch as the Board will hold him responsible for all such violations or evasions of the health law as evidently arise from inattention or neglect on his part.

CXXX. All vessels coming from ports in the United States, north of Sandy Hook, loaded with plaster, salt, brimstone, and iron only, and containing no articles of foreign produce or manufacture, shall be allowed to proceed to the city without being subjected to a visit from the Lazaretto physician, it being the opinion of this Board that these articles are not capable of introducing any contagious poison.

CXXXI. He is required to transmit, daily, to the Board, the bills of inquiry of all vessels visited by him, and also a letter containing a list of the vessels visited, their masters' names, the port from whence they came, and the nature of their cargoes, together with such remarks as he may deem necessary for the information of the Board.

CXXXII. When vessels are detained under quarantine, or for purification, or when sick persons are removed from on board into the hospital, the Lazaretto physician is required to transmit to the Board, daily, an account of everything done in relation to said vessels, as well as of the state of the several patients treated in the hospital.

CXXXIII. He is required to visit and inspect, daily, in conjunction with the quarantine master, every vessel under quarantine, or undergoing purification.

CXXXIV. So soon as vessels have completed their quarantine, or have been fully cleansed and purified, and whenever any sick person in the hospital has entirely recovered, the Lazaretto physician shall inform the Board thereof and await its orders before the vessels are permitted up, or the patient is discharged and allowed to leave the station.

CXXXV. Vessels sent down from the city, by order of the Board, for examination or purification, are to be proceeded with in the same manner as though they had stopped at the Lazaretto on their passage up.

CXXXVI. The sick in the hospital are to be carefully attended by the physician, to the best of his skill and abilities, and to be made as comfortable as the circumstances will permit.

CXXXVII. He shall register, in a book to be provided for that purpose, the names of all persons received into the hospital, as also their ages, sex, and color, the name of the vessel from which they have landed, the name of their disease, and the time of their admission, and of their discharge or death.

CXXXVIII. His prescriptions are invariably to be entered in full in the prescription-book, and his directions, as to diet and *regimen*, in the diet-book, for the use of the steward and nurses.

CXXXIX. Whenever medicines, hospital stores, or anything else are wanted, which may, in his opinion, be necessary for the proper treatment and comfort of the sick, or which may conduce to the advantage of the institution, he will communicate a list to the Board, or to the Lazaretto Committee.

CXL. So often as he shall deem the same necessary, he shall direct the steward to have the hospital cleansed and ventilated.

CXLI. All violations of the health law which come under his notice, or any manifest neglect of duty he may detect on the part of any officer or servant attached to the Lazaretto, he is required at once to communicate to the Secretary of the Board.

CXLII. At the termination of each month of the quarantine period, he shall report to the Board a list of vessels passed up.

CXLIII. He is not to permit any person to pass within the bounds of the Lazaretto, or to leave the same during the quarantine season, except the residents thereof, and then only on the Sabbath day for the purpose of attending Divine worship: *Provided*, There is no sickness at the station; nor shall he permit any person during the same period to land at the wharf, or other United States property attached to the institution, without a special permit from the Board, communicated to him in writing. Should any person enter, leave, or land, as aforesaid, without such permit, the said physician is required to communicate the fact to the Board, that the persons so offending may be dealt with according to law. From the prohibition conveyed by the present rule, the members of the Board are, under all circumstances, exempt.

CXLIV. The United States stores, and the ground and houses occupied by the inspector, are included within the quarantine bound, and subject to the same rules and regulations as the Lazaretto proper.

CXLV. The pilot, engineer, and crew of the steam-tug are placed under the direction of the Lazaretto physician and quarantine master conjointly, so far as regards the duties appertaining properly to their station, or which may be necessary for the preservation of the property belonging to the Board at the Lazaretto, but the Lazaretto physician is not to require them to perform any services for himself, individually, or for his family.

CXLVI. The Lazaretto physician shall deliver to the quarantine master, daily, at or before the hour of closing the mail, the letters and documents which he is required to transmit to the Board, as also any letters he may

wish to send to his friends, or others, in the city, in order that they may be all inclosed in the mail-bag. In no case is any letter or note to be sent up by the mail-carrier. Small packages and bundles may, however, be sent by the latter.

CXLVII. Whenever any doubt or difficulty arises in his mind as to the proper meaning or operation of any part of the health law, he shall state the same in a communication to the Board and await its decision.

CXLVIII. All letters and communications made by him to the Board are to be sealed up and addressed to the Secretary, in his official capacity.

CXLIX. All other orders and regulations which the Lazaretto physician may be called upon to execute will be transmitted to him, from time to time, by the Secretary of the Board.

CL. The Lazaretto physician is authorized, when, in his opinion, he may consider it necessary, to direct all vessels coming from infected ports, but in which no sickness may have occurred during the passage, to be cleaned and ventilated before proceeding to the city, and when, in his opinion, the same has been thoroughly done, to permit them up.

CLI. It is the understanding that the above rule applies only to the time intervening between the mailing of his letters to the Board, and is intended for the purpose of facilitating commerce.

CLII. The officers at the station are required to keep the gates and visiting houses locked at all times.

QUARANTINE MASTER.

CLIII. The quarantine master is required, whenever the wind and weather permit, to visit without delay, in conjunction with the Lazaretto physician, all vessels which shall come to at the Lazaretto, between sunrise and sundown, whether in the outer or inner channel, to examine carefully into the condition, in regard to cleanliness, of the hold, cabin, and forecastle of such vessel, to have the bilge-water pumped out, and, by the introduction of fresh water, to purify completely the run and limbers of said vessels, and also to ascertain whether any part of the cargo is in a damaged or infectious condition, and to report the result of his examination to the Lazaretto physician.

CLIV. He shall take charge of the boats belonging to the Lazaretto, together with their furniture and tackling; see that they are kept in proper order and condition, and at all times fit for immediate service; have them properly moored when not in use, so that they shall neither be damaged nor lost, and at the termination of the quarantine season, have the small boats carefully removed from the water to the storehouse and there well secured.

CLV. The pilot, engineer, and crew of the steam-tug are placed under the direction of the quarantine master and Lazaretto physician conjointly, in all things relating to their proper duties; but the quarantine master is especially required to ascertain whether they conduct themselves with de-

corum and sobriety, that they keep their persons and clothing clean, and that they are attentive and punctual in the performance of their duties. He is not to require them to perform any services for himself individually, or for his family.

CLVII. He shall have a watch set in front of the station during the night, and generally preserve order in and about the Lazaretto, and enforce obedience to, and prevent as far as in his power lies, any neglect, evasion, or violation of the health law, or of the rules, resolutions, and ordinances of the Board.

CLVIII. He is required to remain within the bounds of the Lazaretto during the whole quarantine season, unless by warrant of the Board; and he is to be always in readiness to accompany the Lazaretto physician in his official visits, and to aid him, to the best of his abilities, in the performance of his duties.

CLIX. He is not to permit any one, except members of the Board, to enter into or leave the bounds of the Lazaretto and quarantine station, or to land at the wharf or United States property attached to the institution, on any pretext whatsoever, during the quarantine season, unless by the special permission of the Board, communicated to the Lazaretto physician in writing. And if any person shall enter, leave, or land as aforesaid, without such permit, he is required to communicate the fact to the Board, that the person so offending may be dealt with according to law.

CLX. All violations or evasions of the health law which come under his notice, and any manifest neglect of duty he may chance to detect on the part of any officer or servant attached to the Lazaretto, he is at once to communicate to the Board, through the Lazaretto physician.

CLXI. Whenever he finds, upon examination, that a vessel stopping at the Lazaretto is in a perfectly clean condition, and that no part of her cargo is in a damaged or infected state, he shall, should the Lazaretto physician decide that the said vessel may be permitted up, sign, with him, the permit to that effect.

CLXII. Whenever a vessel with a sick crew is detained at the Lazaretto for purification or under quarantine, it will become the duty of the quarantine master to have her properly and safely moored at such distance from the Lazaretto, as also from all other vessels at the station, as shall prevent the communication of disease to or from the same. He shall prevent any person from going on board vessels so detained, except for the performance of some essential duty, and then only with the consent of the Lazaretto physician; and he is required to take under his charge and effectually secure the boats of all such vessels detained as above, every night, from sunset to sunrise.

CLXIII. The purification by ventilation, scrubbing, and whitewashing of vessels detained at the Lazaretto is to be performed under the direction and superintendence of the quarantine master whenever an order to that effect shall be given by the Lazaretto physician.

CLXIV. Whenever a vessel is detained at the Lazaretto, the quarantine master is, in every instance, to examine into the state of the men's clothing, and if any is found to be foul or infected, to have the same sent on shore, with a view to its being washed by the steward. He shall in no case whatever charge for lime and brushes used in cleansing vessels more than the retail price of such articles in Philadelphia, agreeably to the positive directions of the health law.

CLXV. He is required, under the order and direction of the Lazaretto physician, to have all the sick removed from on board of vessels stopping at the Lazaretto, as also such portions of the cargo, baggage, and stores as the said physician may deem necessary to be cleansed and purified; the cleansing and purification to be effected under his direct superintendence.

CLXVI. When a vessel has undergone purification, or has completed her period of quarantine, he is required to certify to the fact in conjunction with the Lazaretto physician. He is required to visit daily, in company with the latter officer, every vessel under quarantine or undergoing purification for the purpose of ascertaining the condition of her crew, hold, and cargo.

CLXVII. He shall take charge of the letter-bags of all vessels detained at the Lazaretto, and also of all letters and papers delivered to him at any time by the captain, crew, or other persons belonging to the said vessels, or by the Lazaretto physician, steward, or any person or persons within the Lazaretto; and after carefully inclosing them in the mail-bag, transmit them by the Lazaretto mail to the health office in Philadelphia. While doing so, he may also convey in the said mail-bag letters to his friends and others in Philadelphia. He is also permitted to send and receive through the mail-carrier any small package or bundle.

CLXVIII. The Lazaretto mail so made up is to be dispatched every day at such hour as the Board shall direct, and on its return in the evening, the quarantine master is immediately and without fail to open the same, and distribute the letters and papers therein contained to the persons to whom they are respectively directed.

CLXIX. Whenever anything is required for the proper execution of his official duties, the quarantine master is to inform the Lazaretto Committee of the fact.

CLXX. Such other orders and regulations as the quarantine master may be called upon to obey will be transmitted to him from time to time, through the Lazaretto physician.

CLXXIII. The steward shall reside permanently at the Lazaretto, and be allowed, for himself and family, such apartments in the main building as the Lazaretto Committee shall designate.

CLXXVIII. He shall have the general charge of the buildings, grounds, and property of the Board at the Lazaretto; as also see that the same are kept in good order, and that the different apartments of the house are perfectly clean.

CLXXX. He shall have the general superintendence of the hospital buildings, and have the same kept clean, and properly ventilated, and scrubbed and whitewashed as often as the Lazaretto physician or committee shall consider proper and necessary.

CLXXXI. He shall see that all persons under his charge are clean and decent in their apparel, that the beds of the sick are supplied with clean straw, and kept free from vermin, and that the bed-clothing are renewed as often as the Lazaretto physician or committee shall consider necessary.

CLXXXII. He shall invariably treat the patients with kindness and civility; and never suffer any degree of cruelty, insolence, neglect, or unkindness on the part of the nurses or servants towards them to pass unnoticed. He shall also see that the nurses and attendants treat the sick with care and humanity, that the diet directed by the physician is properly prepared and supplied, and generally, that the orders of the physician, in relation to the treatment of the sick, are fully and regularly executed.

CLXXXIV. He shall supply, and have prepared, agreeably to the orders of the physician, all such articles of diet as may be required for the sick; and shall be allowed for the same, for each patient, the sum of three dollars and fifty cents per week, during the time the patient shall remain at the Lazaretto.

CLXXXV. He shall receive at the slip all patients sent on shore by the Lazaretto physician, and see that they are properly and carefully conducted to the hospital.

CLXXXVI. He shall take charge of all the clothing and effects of the patients landed, have them well ventilated, washed, and ironed, and safely and carefully kept until the patients are discharged; and shall be allowed to charge for washing and ironing the sum of seventy-five cents per dozen.

CLXXXVII. Whenever a patient dies in the hospital, or a dead body is landed from a vessel, the steward shall have his or her body decently interred in the burial ground of the institution; see that such of his or her clothing as require it are, within twenty-four hours after the decease of the patient, properly washed, ironed, and put away, or destroyed, when so directed by the physician. For washing and ironing such clothing, he shall be allowed to charge the sum of seventy-five cents per dozen.

CLXXXVIII. He shall take a full and accurate inventory of such clothing and other effects, and forthwith transmit a copy thereof to the Board.

CLXXXIX. So soon as a patient is discharged from, or dies at, the Lazaretto, the steward shall make out, and transmit forthwith to the Board, a bill against the "owner, captain, or consignee" of the vessel from which the said patient was landed, for his or her board and attendance, at the rate of one dollar for each day the said patient has remained at the Lazaretto, counting the days of entrance and departure each one day; and, in case of his or her death, an additional sum of five dollars for funeral expenses.

CXC. He shall be allowed to furnish to the vessels and passengers detained under quarantine whatever supplies they may require, for which he shall make such charges as shall be allowed by the Lazaretto Committee, and shall furnish to the said committee a list of the articles so supplied.

CXCI. He shall, whenever a vessel is detained under quarantine, should the quarantine master deem the same necessary, have the clothing of the crew and passengers well ventilated, washed, and ironed, for which he shall be permitted to charge the sum of seventy-five cents per dozen: *Provided, always*, That the same cannot, in the opinion of the quarantine master, be done promptly by the crew and passengers themselves.

CXCII. He shall supply the pilot, engineer, crew of the steam-tug, and nurses with fitting board, lodging, and washing, for which he shall be allowed by the Board of Health the sum of four dollars and fifty cents per week for each of the persons so supplied.

CXCIII. He shall receive, over and above the respective compensations enumerated, a further compensation at the rate of twelve hundred dollars per annum, and shall furnish, at his own expense, all supplies necessary for himself and family, and such materials and domestics as may be necessary for the due performance of the various services required of him.

CXCIV. The charge for board of patients, and all other charges allowed to be made by the steward for services rendered by him, shall be transmitted by him to the Board, in the form of an account, and the amount of the same shall be paid to the steward by a warrant upon the city treasurer.

PERMITS TO VISIT THE LAZARETTO.

CCXXX. In all applications to visit the Lazaretto, during the quarantine season, the names of the persons on whose behalf the application is made, as well as the time at which they wish to enter, and the intended duration of their stay, and the number of persons, must be stated.

CCXXXI. No permit shall be given to any person to visit the families of either of the officers of the Lazaretto, excepting upon a request made through the said officers, and unless the application come from said families. Permits, however, may be granted under the rule (CCXXX) when the visit is made in company with a member.

CCXXXII. No person shall, without the permission of the Board, enter or depart from the Lazaretto whilst there is a vessel undergoing quarantine, or sickness in the hospital.

CCXXXIII. Under no circumstances, can visitors at the Lazaretto be permitted to accompany the Lazaretto physician or quarantine master on their official visits.

CCXXXIV. Ministers of the Gospel may at any time be allowed to enter and depart from the station, when officially called to attend the dying moments of patients at the station, the Lazaretto physician reporting the same to the Board at the earliest opportunity.

CCXXXV. The privilege of the Island of Tinicum is allowed the resi-

dents of the Lazaretto station, unless there is a vessel at quarantine, or sickness in the hospital.

INSPECTION OF THE LAZARETTO.

On the 6th of August, I visited the quarantine station in company with Dr. R. A. Cleemann, chairman of the Lazaretto Committee, and Dr. John H. Rauch, secretary of the State Board of Health of Illinois. Dr. Rauch was, at that time, engaged in making a tour of inspection of all the quarantine stations of the Atlantic coast. His observations are, therefore, of great value, as they describe the condition of this station, not so much absolutely, as relatively to that of those other important ports of entry. He has kindly placed them at my disposal in advance of publication, and I quote the following remarks:

"The maritime quarantine of the port of Philadelphia, and practically of the State of Pennsylvania, is enforced at the Lazaretto, situated on the left bank of the Delaware river, about eleven miles below Philadelphia. The quarantine grounds are about ten acres in extent, surrounded by cultivated farms, and separated from the main channel by Little Tinicum island, between which island and the station there was formerly a navigable channel, which was used as the quarantine anchorage, but is now too shallow for that purpose for large vessels. Quarantine was established at this point in the early part of the century, and sections of a law enacted in 1802 are still in force. There has been practically little change in the equipments or methods since 1818, except that a steamboat has replaced the many-oared barge used formerly in visiting, and that by this means vessels are inspected *en route*, not being obliged to come to anchor unless detention for sickness is necessary. The structures, comprising a large hospital, (sixty beds,) administration building, government warehouses, &c., are well built and spacious, but antiquated. For more than half a century the establishment was the best equipped on the continent.

"All vessels from foreign ports, and such American ports as may be designated by the Board of Health of Philadelphia, bound for the port of Philadelphia, and arriving between the first of June and the first of October, are required to come to anchor as near the Lazaretto as the draft of water will permit, and there await the visit of the quarantine officers—the Lazaretto physician and the quarantine master. The former administers the oath or affirmation to the captain, and examines personally into the state of health of all on board, and, in conjunction with the quarantine master, ascertains the sanitary history of the voyage, condition of port of departure, character of cargo, etc. The latter officer examines into the condition, with regard to cleanliness, of the hold, cabin, and forecastle, causes the bilge to be pumped out and purified by fresh water, and ascertains whether any part of the cargo is in a damaged or infectious condition. If the vessel is satisfactory in all these respects, a certificate to that effect, signed by both officers, is furnished, and she is allowed to proceed

to the port. This certificate is addressed to the health officer of the port, to whom it must be delivered within twenty-four hours after the vessel lands at her wharf.

"If any contagious or infectious disease (measles excepted) be found on board, or if the vessel be from an infected port, or if her cargo be considered dangerous as to contagion or infection, or the vessel's sanitary condition be unsatisfactory, the certificate is withheld and the necessary measures are instituted to render her safe from conveying contagion or infection. These measures are entirely within the discretion of the Lazaretto physician, (of course, under the control of the Board of Health of the city,) and are enforced under his supervision by the quarantine master. So far as they are prescribed, they consist of purification 'by ventilation, scrubbing, and whitewashing.' Fumigation is effected by sulphur combustion in iron pots. There are none of the modern appliances for disinfection of vessels or cargo. No attention is paid to the vaccinal status of immigrants, unless small-pox is discovered on a vessel; and, as a natural consequence, the disease has frequently been introduced into the interior through this port. Telegraphic communication has recently been established with Philadelphia.

"Owing to the filling up of the channel in front of the Lazaretto, large vessels detained in quarantine cannot be kept out of the track of commerce as completely as is desirable."

BENJAMIN LEE, *Secretary.*

LAKE QUARANTINE AT THE PORT OF ERIE.

An Ordinance for Preventing the Introduction of Contagious Diseases of a Dangerous Nature.

Be it ordained and enacted by the Select and Common Councils of the city of Erie, and it is hereby ordained and enacted by the authority of the same:

SECTION 1. That whenever contagious or infectious diseases of a dangerous nature, are prevalent at any point without the limits of the city of Erie, and, in the opinion of the health-officer, safety to the public health requires that vessels entering the port of Erie shall be inspected, in order that the introduction of such diseases, so far as possible, may be prevented, it shall be lawful for the mayor to give public notice that such inspection is required; and thereafter it shall not be lawful for any vessel arriving from any port without the city of Erie, to come within one half mile of any wharf or other landing place in the city of Erie, without first having been inspected, and having obtained a permit so to do; and it shall also be unlawful for any person or persons, save the inspector and health officer, to leave such vessel, or go to the same, until such inspection shall have been had and permit granted.

SECTION 2. Whenever such inspection is to be enforced, it shall be the duty of the mayor to appoint an inspector, whose duty it shall be to inspect each and every vessel coming into the port of Erie from any other port, and ascertain whether any person or persons thereon are afflicted with any contagious disease of a dangerous nature; and if none such are found, such vessel shall be permitted to proceed at once; but if any person shall be found suffering from such disease, such vessel shall be detained, and notice immediately given to the health officer, who shall take all such steps as he shall deem necessary to protect the public, by removing those diseased to proper places for treatment, and by having the vessel and cargo disinfected, all the costs thereof to be borne by the vessel.

SECTION 3. It shall be the duty of the commanding officer of any vessel coming into the port of Erie with any such diseased persons aboard, to anchor such vessel at such point within the harbor as the health-officer shall direct, and there to remain until the health-officer shall issue a permit for such vessel to leave; and while so stationed, it shall be the duty of those having charge thereof, as also of all persons aboard the same, to obey all such reasonable rules and regulations as the health-officer may prescribe; but it shall be the duty of the health-officer to grant a permit to any person aboard such vessel to go ashore at the earliest moment safety to the public health will permit.

SECTION 4. Any inspector appointed under the provisions of this ordinance shall receive such salary as councils by resolution shall direct.

SECTION 5. Any person violating any of the provisions of this ordinance shall forfeit and pay to the city of Erie, a penalty of not less than ten or more than one hundred dollars, to be collected by action of debt or by summary process as said city may elect; and if any penalty imposed, together with the costs, be not paid, the party convicted shall be imprisoned or put to labor on the streets of the city or elsewhere, for a period not exceeding thirty days, unless such penalty and costs be sooner paid.

[Circular.]

Regulations for the Maintenance of Quarantine Inspection on the Northern Frontier of the United States.

TREASURY DEPARTMENT,
OFFICE SUPERVISING SURGEON-GENERAL U. S. MARINE-HOSPITAL SERVICE.
WASHINGTON, D. C., *October 10, 1885.*

To the Medical Officers of the Marine-Hospital Service, Customs Officers, and others concerned:

The act approved April 29, 1878, entitled "An act to prevent the introduction of contagious or infectious diseases into the United States," provides that no vessel or vehicle conveying persons, merchandise, or animals

affected with any contagious disease, shall enter any port of the United States, or pass the boundary line between the United States and any foreign country, except in such manner as may be prescribed under said act.

Attention is now directed to the prevalence of the contagious and infectious disease of small-pox in Montreal and other places in the Dominion of Canada, and the law referred to is held to apply alike to trains of cars and other vehicles crossing the border and to vessels entering ports on the northern frontier.

Because, therefore, of the danger which attaches to the transportation of persons and baggage, and articles of merchandise, or animals from the infected districts, the following regulations are framed, under the direction of the Secretary of the Treasury, and subject to the approval of the President, for the protection of the health of the people of the United States against the danger referred to.

1. Until further orders, all vessels arriving from ports in Canada, and trains of cars and other vehicles crossing the border-line, must be examined by a *medical inspector of the Marine-Hospital Service* before they will be allowed to enter the United States, unless provision shall have been made by State or municipal quarantine laws and regulations for such examination.

2. All persons arriving from Canada by rail or otherwise, must be examined by such medical inspector before they will be allowed to enter the United States, unless provision has been made for such examination as aforesaid.

3. All persons coming from infected districts, not giving satisfactory evidence of protection against small-pox, will be prohibited from proceeding into the United States until after such period as the medical inspector, the local quarantine, or other sanitary officer duly authorized, may direct.

4. The inspectors will vaccinate all unprotected persons who desire, or are willing to submit to vaccination, free of charge. Any such person refusing to be vaccinated shall be prevented from entering the United States.

5. All baggage, clothing, and other effects, and articles of merchandise, coming from infected districts, and liable to carry infection, or suspected of being infected, will be subjected to thorough disinfection.

6. All persons showing evidence of having had small-pox or varioloid, or who exhibit a well-defined mark of recent vaccination, may be considered protected, but the wearing-apparel and baggage of such protected persons who may come from infected districts, or have been exposed to infection, will be subjected to thorough disinfection as above provided.

7. Customs officers and United States medical inspectors will consult and act in conjunction with authorized State and local health authorities so far as may be practicable, and unnecessary detention of trains or other vehicles, persons, animals, baggage, or merchandise, will be avoided so far as may be consistent with the prevention of the introduction of diseases dangerous to the public health into the United States.

8. Inspectors will make full weekly reports of services performed under this regulation.

9. As provided in section five of said act, all quarantine officers or agents acting under any State or municipal authorities, are empowered to enforce the provisions of these regulations, and are hereby authorized to prevent the entrance into the United States of any vessel or vehicle, person, merchandise, or animals prohibited under the act aforesaid.

10. In the enforcement of these regulations there shall be no interference with any quarantine laws or regulations existing under or to be provided for by any State or municipal authority.

JOHN B. HAMILTON,
Supervising Surgeon-General U. S. Marine-Hospital Service.

Approved:

DANIEL MANNING,
Secretary.

Approved:

GROVER CLEVELAND.

[Circular.]

Prevention of Small-Pox.

TREASURY DEPARTMENT,
OFFICE OF THE SECRETARY,
WASHINGTON, D. C., *September 28, 1885.*

To Customs Officers:

Inspectors and other officers of the customs on the Canadian frontier will aid the sanitary inspectors of the Marine-Hospital Service, and similar inspectors acting under State authority, as far as practicable without interference with their regular duties, and will furnish them such facilities for examination of baggage as may be practicable.

Customs officers in the northern frontier districts will acknowledge the receipt of this order through the proper channels.

DANIEL MANNING,
Secretary.

REPORT OF THE SANITARY COMMITTEE OF THE BOARD OF HEALTH OF PHILADELPHIA ON MUNICIPAL DISINFECTION OF CLOTHING, BEDDING, &c.

OFFICE OF THE BOARD OF HEALTH,
PHILADELPHIA, *September 18, 1885.*

To BENJAMIN LEE, M. D.,
Secretary of the State Board of Health of Pennsylvania:

SIR: By direction of the Board of Health, the sanitary committee make the following reply to your communication of September 4, 1885, containing interrogatories relative to the mode of disinfection practiced by the Board:

Question first. What are the means at the disposal of your board for the disinfection of clothing and bedding and upholstered furniture and carpets which have been used on and about a person ill with an infectious disease?

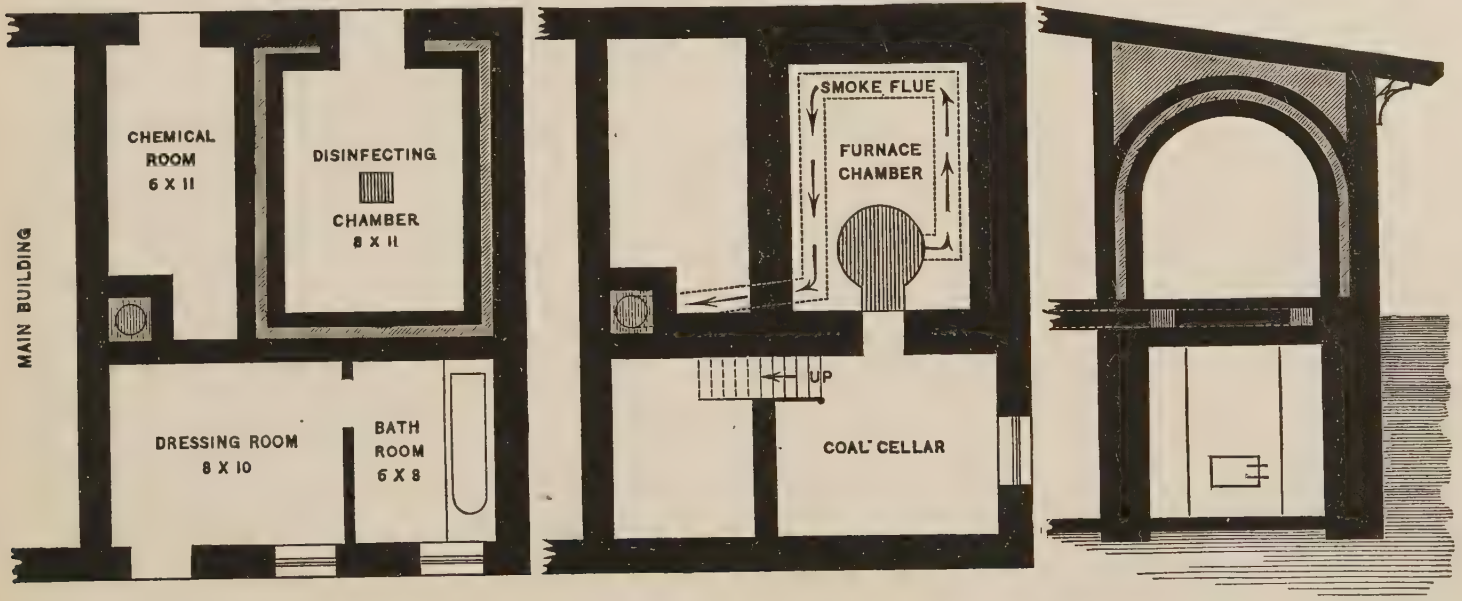
The modes of disposing of infected clothing, bedding, and other articles which have come in contact with persons ill with infectious disease are disinfection by dry heat, by exposure to the fumes of sulphur and chlorine, by boiling and washing, and complete destruction by fire in a furnace specially constructed for the purpose.

Two chambers have been constructed in a building on the grounds connected with the Municipal hospital, at Twenty-second and Lehigh avenue, the one for disinfection by dry heat, the other for disinfection by fumigation. The building is constructed of stone, pointed, and is one-story high, with a basement. It contains on one floor a bath-room, (supplied with hot and cold water,) six by eight feet, communicating with a dressing-room, eight by ten feet; a fumigating chamber, six by eleven feet, and a hot-air chamber, eight by eleven feet.

The fumigating chamber is made perfectly tight, so as to completely confine the gases liberated for the purposes of disinfection. The articles to be purified are suspended and exposed to the fumes of burning sulphur, or other gases, for hours, the length of time being regulated by the character of the articles submitted to the process.

The hot-air chamber is eight feet wide, eleven feet long, and eight feet to the spring of the arch. The interior wall is built of brick, arched at the top, and is nine inches in thickness. Between it and the outside wall is an air space, for the object of economizing the heat. The door is made of wrought-iron, set in a cast-iron frame, so that the chamber is perfectly fire-

DISINFECTING ANNEX TO MUNICIPAL HOSPITAL, PHILA.



FIRST STORY PLAN

CELLAR PLAN

SECTION THROUGH DISINFECTING AND FURNACE CHAMBERS

proof. The furnace is placed in a chamber immediately under the floor, which is laid in tiles of stone, supported on an iron frame-work. The heated air passes directly through an adjustable grating near the center of the floor, over which a soapstone screen is placed to protect the clothing, &c., from the direct rays of heat. The smoke-flue passes around the chamber under the floor before entering the chimney. At the top of the chamber there is an opening provided with a valve, for the escape of air into a shaft leading into the chimney. Cold air is admitted from below into the space around the furnace. Valves control the openings for entrance and exit of air, which can be operated without entering the chamber. The thermometer can be examined from the bath-room through a slit in the wall covered by glass.

A chamber heated by gas, such as the improved disinfecting apparatus of S. Leoni & Co., of London, or the gas-stove of Dr. Ramson, of Nottingham, would probably have been very advantageous for the purposes of the hospital, on the ground of economy, if for no other reason, could the supply of gas have been obtained. A steam disinfecting chamber, such as that proposed by Dr. Esse, and in use in Berlin, has its advantages where steam is already in use.

With the present arrangement, a temperature of 281° F. can be maintained for any length of time. A temperature of 344° F. has been reached, but when the heat is raised above 250° there is danger of scorching the clothing, and there is really no necessity for any higher degree of heat.

"The temperature at which infectious matter is rendered inert has lately been a subject of keen controversy, chiefly in relation to the temperature at which the vitality of living germs and minute infusorial creatures are destroyed. The late Dr. Henry, of Manchester, demonstrated experimentally that the vitality of vaccine matter is destroyed at a temperature of 140° F., and that the virus of scarlet fever is inert after being exposed to a heat of 204° F.; but some of the lower organisms appear to be more tenacious of life, for, according to Dr. Grace Calvert, the common vibrio will bear a temperature of 300°, and his black vibrio, which appears to be a very salamander of animalcules, is not killed by a heat of less than 400° F. After a long investigation, however, before the 'Academie Des Sciences,' of Paris, it was unanimously agreed by all parties to the controversy of spontaneous genesis that none of the lower organisms or their germs would resist in air a temperature of 130° C., (266° F.,) and in liquid a temperature of 110° C., (230° F.) This, indeed, was the temperature fixed by Pasteur himself, although many of the members thought that 100° C. (212° F.) was sufficiently high to destroy all vitality. In most cases, in fact, a temperature of 180° F. is sufficient to destroy infusorial life, for that will coagulate albumen, of which they are made. Assuming, however, that it is desirable to use as high a temperature as possible for disinfection, it is important to know what is the effect of heat upon textile fabrics. Up to a temperature of 250° F., most of these fabrics are un-

changed, unless the exposure is maintained for many hours, when they become discolored and slightly brittle. Above this temperature the change is more marked, and with a dry heat of 300° F., cotton fabrics are slightly charred, and therefore spoilt. At 400° they become dark brown, and crumble into powder when rubbed. At 500° gaseous hydro-carbons are produced, and at 600° all vegetable and animal tissues are converted into charcoal, with the evolution of empyreumatic oil and gas. It would seem, therefore, that, for practical purposes, a heat of 250° F., aided by a jet of steam, for the purpose of diffusing the temperature and helping its action, may be safely applied to textile fabrics."—*Letheby.*

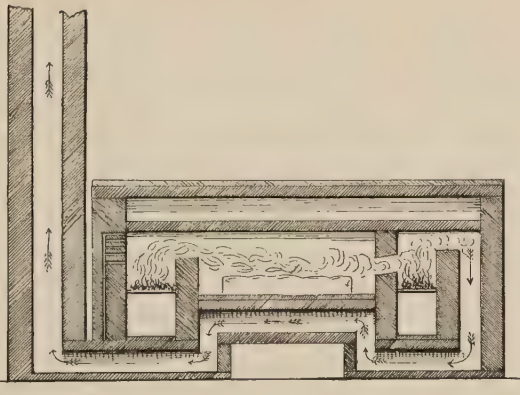
In using the hot-air chamber, care must be taken that none of the articles are in contact with the walls or floor. Small articles are placed on a wire grating; mattresses and more bulky articles are suspended from the ceiling by means of clips made of iron rods. Not only is the disinfecting establishment necessary for the proper treatment of the clothing of patients and articles used in the hospital, which cannot be thoroughly disinfected by the ordinary process of washing, but it is also indispensable in the management of clothing, bedding, carpets, furniture, &c., sent to the hospital for the express purpose of disinfection.

The duration of exposure is regulated by the character of the articles to be disinfected, the object sought being the thorough and prolonged exposure (of several hours) of every part of the material to a high degree of temperature.

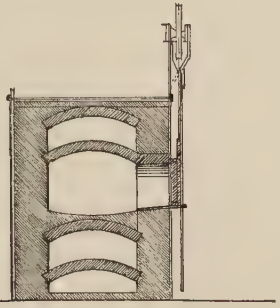
Thus far, the capacity of the disinfecting chamber has been sufficient to meet the demand, but it would be advantageous, as a public measure, if one or more disinfecting chambers were established in other parts of the city. The charges would be so regulated as to simply cover the expenses, or the work might be done gratuitously, for the same reason that vaccination is offered to the public free of charge.

Recently a separate building has been constructed for the destruction by fire of infected articles which are worthless, or which are in such a condition as to make it impossible to purify them by the processes already described. The building contains a reverberatory furnace, (cremating furnace,) fed by two fires, one of which destroys all the smoke emitted from the burning materials by passing it up, through, and over the fire.

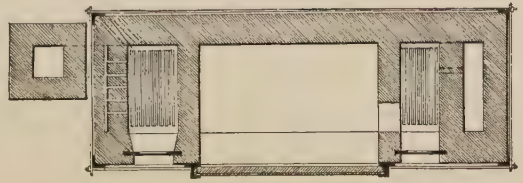
The destroying chamber is six feet long, three feet wide, and three feet high, and is lined throughout with heavy fire-brick. Access to it is by a balance door, five inches thick, made of iron, and backed with fire-brick. It has a peep-hole in the center of it for observing the progress of combustion and for admitting air when necessary. There is a fire-chamber located at each end of the destroying chamber; one is thirty inches long by twenty inches wide, the other twenty-two inches long by sixteen inches wide. The flame of the first fire is directed upon the substances to be burned, and then passes in flues above and below the destroying chamber, and thence



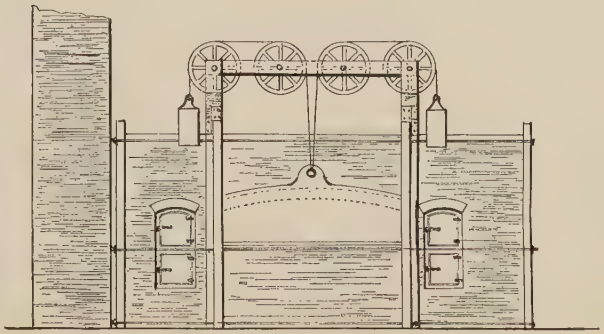
Longitudinal Section.



Cross Section.



Plan



Front Elevation

to the second fire, where the smoke is consumed, and the products of combustion pass finally through a flue at the back of the chamber up a chimney twelve by twelve inches and thirty feet in height.

A neat frame structure, twenty-five feet by fifteen feet, incloses the furnace, which is twelve feet by five feet. There is a clear space all around the furnace—in front, it is sufficient to admit a wagon. The floor is paved with hard brick. There are windows at the sides and front for light and ventilation, and there is also a louvre in the center of the roof. The apparatus accomplishes the work intended in a satisfactory manner.

Question second. Can any citizen avail himself of these facilities free of charge?

To those well able to pay, a charge is made, which is about equivalent to the cost of transportation, which is required to be done by the employés of the hospital in a wagon specially constructed for the purpose. To those unable to pay, these facilities are offered free of expense.

Question third. What are the modes of conveyance of such infected articles from the house to the disinfecting station?

A wagon constructed solely for the purpose is used for transporting infected articles. It is made thoroughly tight, access to it being by means of closely-fitting doors in the rear. The wagon has the name of the hospital painted on it in large letters, to warn people to keep away while it is being loaded. The driver wears a uniform, to prevent him from mingling with people without their knowledge. The wagon, when used for returning articles which have been disinfected, is previously cleaned and fumigated; but it is not always so used, other wagons being at disposal for this purpose. Large rubber sheets are used for tying up the articles—such as clothing, bedding, &c.—before their removal from the house. The person engaged in the work of removal is cautioned to use great care not to expose passers-by to danger. The driver is furnished with a book of printed blanks, in duplicate, upon which are filled in the articles removed and the disposition to be made of them—that is, whether to be destroyed or disinfected and returned. One of these is detached and given to the owner of the goods as a receipt when the goods are to be returned. Upon the back of this receipt are printed explicit directions for cleaning and disinfecting the house and its contents. When the goods are received at the hospital, a copy is made of the contents of the stub, the description and condition of the articles noted, and also the disposition to be made of them carefully set down. A copy of these blanks is herewith furnished.

Question fourth. What precautions are adopted to prevent the spread of infection in transit?

This question has already been answered above.

Question fifth. In what manner are the public informed of the existence of these facilities?

Through the physicians in attendance, who are generally aware of, or should be aware of, the existence of these facilities. Through the sending,

in some cases, of circulars, containing the information, to the houses in which cases of certain contagious diseases are reported to exist. By the visit of the port physician or medical inspector to such houses, and by occasional notices in the public press—such, for example, as appeared in the *Inquirer* of September 11, 1885.

It would be of great advantage if other disinfecting stations could be fitted up in different parts of the city and supplied with the most approved appliances, and placed under careful officers, for the use of citizens, and an effort will be made to accomplish this desirable object. But the prospect of success is not at all encouraging, as the expense of fitting up such establishments and providing the necessary horses and wagons, and their maintenance, is not looked upon with favor by the legislative body of the city.

By order of the Sanitary Committee.

WILLIAM H. FORD, M. D.,
Chairman.

Health Office, ... *188*

ARTICLES RECEIVED FROM

M . . . . . .

No. . . . . . *Street.*

Feather beds, ...

Mattresses, hair, ... straw, ... husk, ...

Pillows, hair, ... feather, ...

Comfortables, ... blankets, ...

Carpets, ...

Woolen clothing, namely: . . . . . .

. . . . . .

. . . . . .

No. . . . . . .

Only to be used when articles are to be disinfected and returned.

Health Office, ... *188*

Articles to be disinfected at owner's risk. Articles that can be washed and disinfected at home, such as bed linen, underclothing, blankets, etc., not to be removed except in special cases.

Received from M . . . . . .

No. . . . . . *Street.*

Feather beds, ...

Mattresses, hair, ... *straw,* . . . . . *husk,* . . . . . .

Pillows, hair, ... *feather,* . . . . . .

Comfortables, ... *blankets,* . . . . . .

Carpets, ...

Woolen clothing, namely: . . . . . .

. . . . . .

. . . . . .

No. . . . . . .

Collector.

Receipt used only when articles are to be returned.

DISINFECTION.

All bed and body linen and other articles that will wash should first be soaked in a large vessel (a tub) containing water impregnated with a solution of carbolic acid (four fluid ounces of carbolic acid, Calvert's No. 4 or No. 5, to the gallon of water) before being taken from the room.

Boiling is one of the surest ways of disinfecting all contaminated clothing. A solution of carbolic acid (as above) should first be added to the water. Any material which cannot be washed without injury should be fumigated, as directed below. All articles which can be spared should be destroyed by fire.

The furniture in the room in which the sick have been should be washed with carbolic acid soap afterwards, the floor and woodwork should be washed with carbolic acid soap or with chloride of lime and water, and the paper should be removed by moistening with water impregnated with the carbolic acid solution. Then after closing the doors, windows, and all other openings, the room should be fumigated, by burning sulphur in an iron dish, and kept closed for several hours. After this, the room should be well aired for several days, by throwing open the doors and windows, and then the ceiling should be whitewashed, and the walls repapered or whitewashed. Articles to be disinfected should be so placed in the room that the fumes of the sulphur will come in contact with them.

Circular containing fuller information to be had on applying at Health Office.

APPENDIX F.

CIRCULARS AND FORMS.

1. Regulations for Slaughter-houses, Bone-boiling Establishments, etc.
2. Precautions against Small-pox.
3. Precautions against Cholera.
4. Forms of Complaint of Nuisance.
5. Forms of Order to Abate Nuisance.
6. Regulation in Regard to Sanitary Regulation of Travel and Traffic.
7. Rules of the Philadelphia Board of Health.

PROVISIONAL REGULATIONS FOR PREVENTING SLAUGHTER-HOUSES, STOCK-YARDS, HOG-PENS, BONE-BOILING, AND FAT-RENDERING, AND OTHER SIMILAR ESTABLISHMENTS FROM BEING OR BECOMING PREJUDICIAL TO THE PUBLIC HEALTH.

Nuisances Defined.

1. Whatever is dangerous to human life or health, and whatever renders soil, air, water or food impure or unwholesome, are declared to be nuisances and to be illegal; and every person having aided in creating or contributing to the same, or who may support, continue, or retain any of them, shall be deemed guilty of a violation of these regulations.

House-Refuse, Garbage, Etc.

2. No house-refuse, offal, garbage, dead animals, decaying vegetable matter or organic waste substance of any kind, shall be thrown upon any street, road, ditch, gutter or public place, and no putrid or decaying animal or vegetable matter shall be kept in any house, cellar or adjoining out-buildings for more than twenty-four hours.

Noxious Trades.

3. No person or company shall erect or maintain any manufactory or place of business dangerous to life or detrimental to health, or where unwholesome, offensive or deleterious odors, gas, smoke, deposit, or exhalations are generated, within one mile of the limits of any city or borough, without

the permit of the board of health of said city or borough, and all such establishments shall be kept clean and wholesome so as not to be offensive or prejudicial to public health, nor shall any offensive or deleterious waste-substance, refuse, or injurious matter be allowed to accumulate upon the premises or be thrown or allowed to run into any public waters, stream, water-course, street, road or public place. And every person or company, conducting such manufacture or business shall use the best approved and all reasonable means to prevent the escape of smoke, gases and odors, and to protect the health and safety of all operatives employed therein.

4. The business of bone and horse-boiling shall not be allowed, unless conducted under cover, the building to be provided with smoke-consumers, and a due regard be had to cleanliness in the disposition of the offal. No bone-boiling establishment or depository of dead animals shall be kept or erected in any part of this Commonwealth, which is not under the jurisdiction of a local board of health, without a permit from the board of health of the nearest city or borough.

5. No permit shall be granted to any person or persons to carry on the business of boiling bones and dead animals, until after a careful inspection of the locality, buildings and apparatus, and of the plans for conducting the business, by an accredited inspector of the State Board of Health, or, if such inspector be not accessible, then by an inspector appointed for the purpose by the councils of the nearest city or borough, or by the board of health of the same.

6. No bone-boiling establishments or depositories of dead animals shall be kept or erected in or near to a thickly inhabited neighborhood.

7. The floors of all bone-boiling establishments and depositories of dead animals shall be paved with asphalt, or with brick or stone, well laid in cement, or with some other impervious material, and shall be well drained. All such establishments shall have such an adequate water-supply as will enable thorough cleanliness to be maintained.

8. The boiling of bones, dead animals, etc., shall be conducted in steam-tight kettles, boilers or caldrons, from which the foul vapors shall first be conducted through scrubbers or condensors, and then into the back part of the ash-pit of the furnace fire, to be consumed; or by other apparatus equally efficient in preventing or counteracting the offensive effluvia.

9. When bones are being dried, after boiling, they shall be placed in a close chamber, through which shall be passed, by means of pipes, large volumes of fresh air, the outlet terminating in the fire-pit.

10. All proprietors of bone-boiling establishments not having, on the first day of July, 1886, permits to carry on the business, and violating these regulations, shall be liable to prosecution for failing to obey this order, and also be liable to an indictment at common law for creating and maintaining a nuisance.

11. The permit clerk of each local board of health shall have provided a book in which to enter the names of all persons engaged in the business

of boiling bones, and having depositories of dead animals; also the location of works and appliances, as reported by the inspector, whether licensed or not, the number and date of permit, and remarks.

12. No person, or persons, without the consent of the board of health of the nearest city or borough, shall build or use any slaughter-house within the limits of this Commonwealth; and the keeping and slaughtering of all cattle, sheep, and swine, and the preparation and keeping of all meat, fish, birds, or other animal food, shall be in the manner best adapted to secure and continue their wholesomeness as food; and every butcher, or other person, owning, leasing, or occupying any place, room, or building wherein any cattle, sheep, or swine have been, or are, killed or dressed, and every person being the owner, lessee, or occupant of any room or stable wherein any animals are kept, or of any market, public or private, shall cause such place, room, or building, stable or market, to be thoroughly cleansed and purified, and all offal, blood, fat, garbage, refuse and unwholesome and offensive matter to be removed therefrom at least once in every twenty-four hours after the use thereof for any of the purposes herein referred to, and shall also, at all times, keep all wood-work, save floors and counters in any building, place or premises aforesaid thoroughly painted or whitewashed; and the floors of such building, place or premises shall be so constructed as to prevent blood or foul liquids or washings from settling in the earth beneath.

13. No blood-pit, dung-pit, offal-pit or privy-well shall remain or be constructed within any slaughter-house. Any one offending against this rule shall be guilty of creating and maintaining a nuisance prejudicial to public health, and shall be required to remove the nuisance within ten days from the date of notice.

14. The owners, agents, or occupiers of all slaughter-houses are required, during the months of June, July, August and September, to distribute, twice in each week, not less than twenty-five pounds of chloride of lime about their premises, and also to remove the contents of any manure-pit or manure-pile on the premises, once in each week, the said premises and contents of manure-pits being hereby declared to be nuisances prejudicial to public health, unless subjected to frequent disinfection and cleansing as herein indicated.

15. *All constables and supervisors are enjoined, and all citizens are respectfully desired*, to give information to the State Board of Health of any violation of the health laws, or of the regulations of the Board, so that the sanitary measures adopted by the latter to insure the health of the State may be fully carried out, and all offenders promptly punished.

Benjamin Lee, M. D.,
Secretary and Executive Officer.

[NOTE.—Section 6 of the act of June 3, 1885, confers upon the State Board of Health power and authority to order nuisances to be abated and removed in cities, boroughs, districts and places having no local board of health. All persons violating or failing to obey such order become liable on conviction to a fine of one hundred dollars.]

PRECAUTIONS AGAINST SMALL-POX.

[Circular No. 8.]

COMMONWEALTH OF PENNSYLVANIA,
STATE BOARD OF HEALTH.

In view of the epidemic of small-pox now raging with such fearful malignity in the Dominion of Canada, and of the ease with which this loathesome disease could be transported in a few hours, by direct railroad communication, into our cities and homes, the State Board of Health feels it to be its imperative duty to issue certain suggestions and regulations, compliance with which will render our entire population absolutely proof against the infection.

Preventive Precautions.

VACCINATION is, of course, the one and only preventive. Fortunately, the people of this Commonwealth are so generally well informed and intelligent that there is no reason to apprehend a repetition of the disgraceful scenes of riot and blood-shed which have just been enacted across the border, in the ignorant attempt to thwart the beneficent efforts of the health authorities to check the spread of the pestilence. But carelessness and neglect may reap as baneful a harvest as criminal opposition. Convinced of this, the Board, at its very first meeting, passed a resolution instructing the Secretary to prepare a circular warning the people of this State of the prime necessity of vaccination. Nothing is certain in this world; but, next to the rising of the sun, nothing is more absolutely certain than the fact that *thorough* vaccination, with *reliable* lymph, repeated with *sufficient frequency*, is a sure preventive against small-pox. And the fact next in order of positiveness is that *careful* vaccination with *pure* lymph will convey to a person susceptible of small-pox the vaccine disease, or cow-pox, *and no other disease.* Hence, first, it is important that vaccination should be performed by an educated physician, in order to determine that the lymph used is pure and reliable, especially if taken from a human being, (humanized lymph,) and that the vaccination has thoroughly *taken.* Secondly, if bovine (heifer) lymph is preferred, it should be obtained from an entirely reliable source, in order that it may be (first) free from all impurities, and (secondly) lively and efficient. Impressed with the importance of this subject, the committee on compulsory vaccination of the Medical Society of the State of Pennsylvania say, in their report, in 1873:

"The measure which is found to be necessary to maintain such an act in England is the one which must precede its enactment in this country, viz:

the establishment, near every large centre of population, by, and at the expense of the body corporate which imposes the act, whether National, State, or Municipal, of a station for the preservation, perpetuation, and furnishing of pure bovine or heifer lymph. Until this is done all hope of making vaccination universal must be given up." The justice of these conclusions is as apparent as their wisdom, and, in order to give them practical embodiment, the State Board of Health will encourage the establishment, in the immediate vicinity of the cities of Philadelphia and Pittsburgh, of vaccine farms, which shall be under the constant supervision of educated physicians, and in which every provision will be made for insuring the health of the animals used for the purpose of propagating the lymph, and the most scrupulous cleanliness in their surroundings, with the anticipation that public institutions and public vaccinators will be able to obtain virus at a very low price, so that, in case of an epidemic occurring in a destitute locality, it can be furnished free of expense to the authorities.

Precautions in regard to Infants.

Every infant should be vaccinated within three months after its birth, unless an educated physician advises to the contrary. Should the first attempt fail, it should be repeated at intervals of a fortnight until a true sore is produced.

Precautions in regard to Children.

Every child should be re-vaccinated before it reaches its *twelfth year.*

No child should be allowed to enter any school, public or private, who has not been vaccinated within the specified time. The following

Rules are recommended for adoption by all Public School Boards and Trustees.

I. Every child entering the public schools of . . . . . must give satisfactory evidence of protection against small-pox, or be excluded until the rule is complied with.

II. The fact of vaccination and protection shall be entered with each name on the school record, and on transfer or promotion lists.

III. Intercourse between the school and a family or house where there is a case of small-pox, must be forbidden until official permission is given.

IV. Every school-teacher or school-officer who discovers a case of this disease among the attendants on the school, must report the fact immediately to the local board of health, or, if there be no local board, to the State Board of Health.

Until the Legislature, expressly by statute, confers this authority on school boards, teachers, or officers, the order of this Board is a sufficient sanction. Boards deciding to exercise this power should pass a resolution

to that effect, and post a notice, for at least ten days, in two or more conspicuous places, within the limits of their respective school board or district organizations. Such notice should offer free vaccination to all who are unable to pay.

Precautions in regard to Adults.

Every adult should be re-vaccinated once in seven years.

Precautions in the Immediate Presence of an Epidemic.

The State Board of Health recommends that in whatever city, village, or town small-pox appears, the entire neighborhood in which there has been any communication with the patient, or exposure to the contagion, shall be notified that the *State Board of Health requires that every person shall be protected by vaccination ;* that tramps and other persons suspected of infection with small-pox shall be taken in charge by the police and the sanitary authorities; that *employers shall advise their companies of employed persons to be vaccinated,* and, in case of small-pox in their vicinity, *shall make such vaccination one of the conditions of being continued in employment.* This rule should be strictly enforced in all manufactories that make goods that are liable to become infected, and especially should be a standing regulation *in paper-mills, in public houses, and among all classes employed on railroad trains and passenger vessels.*

Form of Report to the State Board of Health and the Local Board.

(Name and age.) . . . . . is sick with small-pox (or varioloid) at (Name of house and place.) . . . . . The eruption began (Date.) . . . .

It is believed the contagion was taken at . . . . . by exposure to . . . . .

Number of persons now exposed to patient . . . . . .

Who has the responsible care of the case ?

(Signed,) . . . . . .

(P. O. address,) . . . . . .

REQUEST :

. . . . . .

. . . . . .

Such a notice, with the request that needs to be made, should be sent to the health officer or the nearest member of the local board of health. If a physician is already in attendance, he should sign it; but if no physician has reached the patient, the householder and any other person who has charge of the case should sign the first report and request, and send it to the family physician or to the health officer. The physician who first sees the case, or the health officer, should write out such a brief report and his own request, and send it by mail to the Secretary of the State Board of Health.

The Board further recommends that municipal authorities shall immediately provide such hospital or place of reception for the sick and infected as is judged best for their accommodation and the safety of the inhabitants, which shall be subject to the regulations of the said authorities, who may cause any sick and infected person to be removed thereto unless the condition of such person will not admit of his removal without danger to his life, in which case the house or place where he remains shall be considered as a hospital, and all persons residing in, or in any way concerned within the same, shall be subject to the regulations adopted for the hospital. They shall use all care to prevent the spreading of the infection, and shall give public notice of infected places by displaying yellow flags at proper distances, by supervising public conveyances, and by all other means which, in their judgment, shall be most effectual for the common safety. And whoever obstructs the said authorities, or their agent, in using such means to prevent the spread of the infection, or wilfully removes, obliterates, defaces, or handles the yellow flags or other signals so displayed, shall, upon conviction, forfeit, for each offense, a sum of not more than one hundred dollars, at the discretion of the court.

Precautions in the Immediate Presence of the Disease.

I. Every member of the family should be vaccinated afresh.

II. The patient should be placed in one of the upper rooms of the house, the farthest removed from the rest of the family, where is to be had the most complete ventilation and isolation. The room should be instantly cleared of all curtains, carpets, woolen goods, and all unnecessary furniture. The room should be kept *constantly well ventilated* by means of open windows, and of fires, if necessary. The utmost cleanliness should be observed both with regard to the patient and the room.

III. A basin charged with chloride of lime, or some other convenient disinfectant, should be kept constantly on the bed for the patient to spit in. Change the clothing of the patient as often as needful, but do not carry it while dry through the house. A large vessel (a tub) containing a disinfectant solution should always stand in the room for the reception of all bed and body linen immediately on its removal from the person or contact with the patient. Pocket-handkerchiefs should not be used, but small pieces of rag should be employed instead for wiping the mouth and nose; and each piece, after being once used, should be immediately burned. Two basins, one containing water impregnated with a disinfectant solution, and the other containing plain water, and a good supply of towels, must always be ready and convenient, so that the hands of the nurse may be at once washed after they have been soiled by contact with the patient. All glasses, cups, and other vessels used by or about the patient should be scrupulously cleansed before being used by others. The discharges from the bowels and kidneys are to be received, *on their very issue from the body*, into vessels containing a disinfectant and immediately removed.

IV. No persons should be allowed to enter the room except those who are attending upon the sick. A sheet moistened with a strong disinfectant solution, and suspended outside the door of the room or across the passage-way leading to it, is necessary to complete the isolation of the patient.

V. *Boiling is the surest way of disinfecting all contaminated clothing.* A disinfectant should first be added to the water. Any material which cannot be washed without injury should be exposed to a dry heat of about 240 Fahr., or fumigated in a closed chamber, as directed below. A hot-air disinfecting chamber should be provided near all cities, where beds, woolen goods, etc., may be disinfected under the direction of officers appointed by the board of health. All articles which can *possibly* be spared should be destroyed by fire.

Small-pox is most contagious during convalescence; therefore, strictly observe that the patient does not mingle with the family until all the scabs are entirely off, and only after a thorough purification by washing and entire change of clothing.

VII. In case of death, wrap the corpse in a sheet saturated with the strongest disinfectant solution, without previous washing, and bury it in a deep grave within twenty hours, and without a public funeral.

(NOTE.—The body of a person who has died of small-pox should never, under any circumstances, or after any lapse of time, be disinterred.)

Disinfecting Solutions.

Principally suggested by the Committee on Disinfectants of the American Public Health Association.

For the Disinfection of the Discharges from the Patient.

1. *Standard Solution No. 1.*—Dissolve chloride of lime or bleaching-powder of the best quality (containing at least twenty-five per cent. of available chloride) in soft water in the proportion of four ounces to the gallon.

2. *Standard Solution No. 2.*—Dissolve corrosive sublimate and permanganate of potash in soft water in the proportion of two drachms of each salt to the gallon.

(NOTE 1.—This solution is highly poisonous. 2. It requires a contact of one hour to be efficient. 3. It destroys lead pipes. 4. It is without odor.)

3. *Standard Solution No. 3.*—To one part of Labarraque's solution (*liquor sodæ chloratæ*—U. S. P.,) of hypochlorite of soda add five parts of soft water.

(NOTE.—Competent authority has pronounced this superior to all other disinfectants.)

For the Disinfection of Clothing, Towels, Bedding, and other Textile Fabrics.

Standard Solution No. 4.—Dissolve corrosive sublimate in water in the proportion of four ounces to the gallon, and add one drachm of permanganate of potash to give color to the solution, as a precaution against

poisoning. One fluid ounce of this solution to the gallon of water is sufficiently strong. Articles should be left in it for two hours. One gallon of standard solution No. 1, may also be mixed with nine gallons of water and used in the same way. No article should be allowed to leave the infected room until it has been either disinfected or boiled.

(Note.—Corrosive sublimate solutions should be kept in wooden or crockery vessels.)

For the Disinfection of Water-closets, Urinals, Sinks, and Cess-pools.

4. *Carbolic Acid Solution.*—Mix one pint of carbolic acid with two and a half gallons of water.

Standard solution No. 4, diluted with three parts of water, may also be used in the proportion of one gallon (of the solution) to every four (estimated) of the contents of the vault. Standard solution No. 1, would require to be used gallon for gallon of the material to be disinfected. Dry chloride of lime may be sprinkled over the contents of a privy, or standard solution No. 2, may be made up by the barrel, and four or five gallons be applied daily during an epidemic.

For the Disinfection of the Sick Room after it is Vacated.

Thorough ventilation for several days, and thorough washing of all surfaces with one of the disinfecting solutions, say, one pint of standard solution No. 4, to four gallons of water, or a quarter of a pint of solution of hypochloride of soda to a gallon of water. The walls and ceiling, if plastered, may be washed with this and then whitewashed. All dust must be carefully washed (not brushed or swept) away from ledges, cracks, corners, and crevices.

Sulphur Fumigation.

To use this effectively, two pounds of sulphur should be burned in a room ten feet square. Every opening in the room—flues, doors, windows, cracks, and crevices—must be closed, except the door by which the disinfector is to escape. The sulphur is to be burned in an iron kettle or other vessel set in a tub containing a little water to guard against fire. A little alcohol or kerosene must be poured upon the sulphur, by means of which it may be ignited. Leave the room quickly, for the fumes are highly poisonous when breathed, and close the door tightly. Let the room remain closed twenty-four hours or more; then air thoroughly for several days.

BENJAMIN LEE, M. D.,
Secretary.

Philadelphia, *December 1, 1885.*

PRECAUTIONS AGAINST CHOLERA.

[Circular for General Distribution, No. 7.]

COMMONWEALTH OF PENNSYLVANIA,
STATE BOARD OF HEALTH.

In view of the terrible ravages of Asiatic, or epidemic cholera in Europe during the past eighteen months, in which time it has numbered its victims by tens of thousands, and of the fact that it is constantly invading new regions on that continent, showing an especial preference for the shores of the Mediterranean, with which our country has extensive and intimate commercial relations, the State Board of Health of Pennsylvania has deemed it wise to issue a few concise rules, the observance of which will tend to check its spread should it reach our shores. That it has not done so already is not due to any change in the epidemic character of the disease, but simply to the fact that the United States Government has at length awakened to a sense of its responsibilities, as the guardian of the health of its citizens, and adopted wiser and more stringent measures than ever before to prevent the scourge from starting on its voyage of destruction. It is too much to hope, however, that it can be entirely shut out, with the limited appliances at present at the command of our authorities. Let not the fact that the warm season is over engender a false sense of security. In one of our recent epidemics, the first cases appeared in the month of December, and, with the favoring conditions of the following summer, the pestilence burst forth. It is the part of wise generalship "in time of peace" to "prepare for war," and not wait until the foe is upon us, and mad panic sunders all ties and paralyzes all resistance. The Board, therefore, suggests, as of the utmost importance, the following:

Preventive Precautions.

Filth is the home, nest, and breeding-place of cholera. The removal of filth beforehand is of infinitely more use than its attempted disinfection after the epidemic has begun. To this end it is essential:

1. To examine the condition of all public water-supplies, and, if pollution is discovered, to cut off its source.

2. To examine the surroundings of all private wells with reference to the existence of causes of pollution.

3. To remove all house-refuse, offal, and garbage from the neighborhood of habitations, and either bury or burn it.

4. To use copperas, dry or in solution, (a pound to a gallon of water,) in all places which are in the least offensive.

5. To examine thoroughly all house plumbing and drainage, and remedy defects.

6. To thoroughly and frequently cleanse all cellars, out-houses, stables and hog-styes, using whitewash frequently.

7. To drain all wet places in the immediate neighborhood of dwellings, and to drain, ventilate and, if necessary, cement damp cellars.

The organization of local boards of health in every city, borough and

township in the Commonwealth during the coming winter is of the utmost importance to aid in carrying out these suggestions, and local boards already in existence should act with energy and dispatch. Should our quarantine authorities, national and municipal, who are hourly on the alert to prevent the introduction of this particular disease, be successful in their benevolent, devoted and patriotic efforts, it will be a satisfaction to know that no pains taken, no labor expended, no expense incurred in improving the sanitary condition of our towns and our homes, will have been wasted. These measures must inevitably result in diminishing the prevalence of other diseases which we have always with us, and which, in the long run, therefore, carry off more victims than cholera, in its comparatively short, though terrible, stay. Should it make its appearance after we have thus put our habitations and surroundings into the complete state of preparation above recommended, we may view it with comparative indifference. It will not be wise, however, in its presence to neglect certain

Protective Precautions.

The cholera poison, whatever it be, is taken into the system through the mouth—that is, *in food and drink*. Simply being near a cholera patient cannot give you the disease. Therefore, have no fear of visiting a cholera-infected house on an errand of necessity or of mercy, or even of nursing a cholera-stricken relative or friend. Still further, there is strong ground for believing that the natural juices of a healthy stomach will destroy the vitality of this poison. In Europe, last year, the greatest number of new cases were usually reported on Monday mornings, Sunday being the day for dissipation among the working classes, and thus leaving them with disordered stomachs, incapable of destroying the activity of the virus before it reached the bowels, where alone it has the power of doing injury. It is, therefore, of the utmost importance to preserve a vigorous digestion by observing a few simple

Personal Precautions.

1. Avoid all excesses in food or drink, and especially in alcoholic drinks.

2. Take your meals at regular intervals, and do not go into an infected house on an empty stomach.

3. Avoid intense excitement, violent exercise, colds from undue exposure and the immoderate use of ice-water.

4. Do not restrict the range of your diet suddenly or exceedingly.

5. Keep the skin in active condition by frequent bathing of the whole body with tepid water, and never eat without first washing the hands carefully. Cholera rarely attacks those who lead healthy, cleanly lives. Its victims are usually found among the dissipated, the careless, and the dirty.

While thus placing your body in a thoroughly defensive condition, do not overlook the importance of

Precautions in regard to Food.

1. Look upon unripe or overripe fruit or vegetables as so much poison,

and do not allow your children to have pennies to buy the half-decayed fruit offered for sale on the street stands.

2. It has been abundantly proved that heat destroys the potency of the cholera poison. Therefore, use no water for drinking, or for washing cooking and table utensils, which has not been thoroughly boiled. You will also err on the side of safety if you eat no uncooked fruit or vegetables.

3. Milk is especially liable to convey infection, and should, therefore, always be boiled.

4. If you use a filter, see that your water-cooler is rinsed carefully every day, and that the filtering material is frequently washed or changed.

5. As sulphuric acid has been proven to possess the power of destroying the infectious material of cholera, if there is the slightest reason to suppose that the water is polluted, use the additional precaution of adding a tablespoonful of dilute sulphuric acid to every gallon of drinking water. This quantity will not render the water unpalatable. A little sugar may be added, however, if the acid is distasteful. In case of diarrhoea coming on, this acid mixture may be taken of six times the above strength, and frequently repeated in small doses until a physician can be summoned, which should always be done immediately, if the epidemic is a virulent one, the patient meanwhile remaining on his back.

6. As the infection may be carried in clothing, do not send your own to public laundries. That of cholera patients may be washed in the same water, and the disease may thus be brought back to your own house.

Should a member of your family be attacked with the disease, keep the patient in the house, as removal might be fatal, and send away the well members as far as practicable.

Use the following

Precautions in the Sick Room.

1. All carpets, curtains, and clothing not in use, contents of bureau-drawers and wardrobes, books, etc., should be removed from the sick room at the earliest possible moment.

The infection resides in the discharges of the patient, whether from the stomach or the bowels, but especially from the latter; therefore,

2. All such discharges should be received in a vessel containing about a pint of disinfecting solution, thoroughly mixed, and allowed to stand fifteen minutes, if possible, before emptying. If in the country, they should then be buried at least eight inches under ground, and remote from any well or running stream.

3. Any clothing, bedding, towels, napkins, or handkerchiefs, soiled by a patient, should at once be immersed in a strong disinfecting solution, allowed to remain four hours, and then boiled or exposed to dry heat for four hours, (230° Fahr.)

4. After the recovery or death of the patient, as much of such clothing as can be dispensed with should be burned. All utensils used by the patient should be placed at once in a disinfecting solution before being washed.

5. During convalescence all the discharges of the patient must be treated as if they were fresh cholera discharges.

6. The dead should be enveloped in a sheet saturated with a disinfecting solution without previous washing of the body, and at once placed in a coffin. Burial should be immediate and private.

Disinfecting Solutions.

The Board recommends the following disinfecting solutions, principally suggested by the Committee on Disinfectants of the American Public Health Association:

For the Disinfection of the Discharges from the patient.

1. *Standard Solution No. 1*—Dissolve chloride of lime or bleaching powder of the best quality (containing at least twenty-five per cent. of available chlorine) in soft water in the proportion of four ounces to the gallon.

2. *Standard Solution No. 2.*—Dissolve corrosive sublimate and permanganate of potash in soft water in the proportion of two drachms of each salt to the gallon.

[NOTE.—1. This solution is highly poisonous. 2. It requires a contact of one hour to be efficient. 3. It destroys lead pipes. 4. It is without odor.]

3. *Standard Solution No. 3.*—To one part of Labarraque's Solution (*liquor sodæ chloratæ*, U. S. P.,) of hypochlorite of soda add five parts of soft water.

[NOTE.—Competent authority has pronounced this superior to all other disinfectants.]

For the Disinfection of Clothing, Towels, Bedding and other Textile Fabrics.

Standard Solution No. 4.—Dissolve corrosive sublimate in water in the proportion of four ounces to the gallon, and add one drachm of permanganate of potash to give color to the solution as a precaution against poisoning. One fluid ounce of this solution to the gallon of water is sufficiently strong. Articles should be left in it for two hours. One gallon of standard solution No. 1 may also be mixed with nine gallons of water, and used in the same way. No article should be allowed to leave the infected room until it has been either disinfected or boiled.

[NOTE.—Corrosive sublimate solutions should be kept in wooden or crockery vessels.]

For the Disinfection of Water-Closets, Urinals, Sinks and Cess-Pools.

4. *Carbolic Acid Solution.*—Mix one pint of carbolic acid with two and a half gallons of water.

Standard solution No. 4, diluted with three parts of water, may also be used in the proportion of one gallon (of the solution) to every four (estimated) of the contents of the vault. Standard solution No. 1, would re-

quire to be used gallon for gallon of the material to be disinfected. Dry chloride of lime may be sprinkled over the contents of a privy, or standard solution No. 2, may be made up by the barrel, and four or five gallons be applied daily during an epidemic.

For Disinfection of the Sick Room after it is vacated.

Thorough ventilation for several days, and thorough washing of all surfaces with one of the disinfecting solutions, say, one pint of standard solution No. 4, to four gallons of water, or a quarter of a pint of solution of hypochlorite of soda to a gallon of water. The walls and ceiling, if plastered, may be washed with this and then whitewashed. All dust must be carefully washed (not brushed or swept) away from ledges, cracks, corners, and crevices.

5. *Sulphuric Acid Solution.*—Sulphuric acid or oil of vitriol is often accessible when other disinfectants are not, and is very effective, in the proportion of one ounce to the gallon of water, for disinfecting cholera stuff, (discharges;) of the same strength for soiled clothing, and of half this strength for bathing the body of the sick or the hands of the attendants, or sponging the clothing of attendants and the floor and carpets, if they become soiled.

J. F. EDWARDS, M. D.,
Chairman of Com. on Preventable Diseases.
BENJAMIN LEE, M. D.,
Secretary.

EXECUTIVE OFFICE, 313 S. 15TH ST., PHILADELPHIA,
NOVEMBER 1, 1885.

FORMS FOR COMPLAINT AND ORDER FOR ABATEMENT OF NUISANCES.

[Form 4.]

. . . . . *188*

To the State Board of Health: . . . . . .

GENTLEMEN: Your attention is respectfully called to the existence of a nuisance on the premises . . . . . , ... township, ... county, arising from . . . . .

[Reverse.]

. . . . . *County.*

Examined *188*

Premises . . . . . .

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. . . . . *Inspector District No.* . . . . . .

Notice Served, ... *188*

Time . . . . . *Days.*

ORDER FOR ABATEMENT OF NUISANCE.

[Form 5.]

Commonwealth of Pennsylvania,
State Board of Health,
Executive Office, 1532 Pine Street,
Philadelphia, ... *188*

To . . . . . , ... township, ... county, owner, agent, or occupier of premises situated . . . . . You are hereby notified and required to abate, within . . . days from the date of the service hereof, a certain nuisance on the above-described property, consisting of . . . . which nuisance has been declared to have a tendency to endanger and be prejudicial to the public health. On failure to do and perform which, the said nuisance will be removed by the Board, and suit will immediately be entered against you, agreeably to the provisions of the act of Assembly.

By order of the State Board of Health of Pennsylvania.

. . . . . .

Secretary and Executive Officer.

The Act of Assembly

confers upon the State Board of Health "power and authority to order nuisances, or the cause of any special disease or mortality, to be abated and removed." Any person who shall fail to obey, or shall violate such order, becomes liable to a fine of one hundred dollars for each such neglect or violation.

[Reverse.]

Served . . . . . *188* , *upon* . . . . . .

. . . . . *owner, agent, or occupier of the within-described*

premises, by . . . . . .

. . . . . .

Special Medical Inspector.

. . . . . *District.*

County, ... *Township.* . . . . .

In order to effectively abate and remove the Nuisance herein referred to, it is

HEREBY ORDERED

That . . . . . .

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Secretary and Executive Officer.

REGULATION OF TRAVEL AND TRAFFIC.

COMMONWEALTH OF PENNSYLVANIA,
STATE BOARD OF HEALTH.

Regulation in regard to the Sanitary Supervision of Travel and Traffic.

Upon satisfactory information of the approach to, or the transit through, the Commonwealth of Pennsylvania, of infected persons or goods, it shall

be the duty of the Secretary, as executive officer of the Board, to cause the same to be stopped at the State line, or, if found within the limits of the State, to cause such person or goods to be removed from cars, stages, vessels, boats or other conveyances, and securely isolated and disinfected; and he may, if, in his judgment, the emergency is such as to demand it, call a meeting of the "Committee on Travel and Traffic," to which his action shall be submitted, with his reason therefor, in writing. But in cases coming under the jurisdiction of national or municipal quarantine authorities he shall coöperate with said authorities in all such action.

By order of the Board.

(Signed,) BENJAMIN LEE, M. D.,
Secretary,
Executive office, Philadelphia.

REGISTRATION OF MARRIAGES AND OF MEDICAL PRACTITIONERS.

[Circular Addressed to Prothonotaries and Clerks of Orphans' Courts, No. 4.]

COMMONWEALTH OF PENNSYLVANIA,
STATE BOARD OF HEALTH,
CENTRAL BUREAU OF VITAL STATISTICS,
STATE CAPITOL, HARRISBURG, ... , *183*

. . . . . .

DEAR SIR: Your attention is respectfully asked to section seven of the act of Assembly approved June 3, 1885, establishing a "State Board of Health and Vital Statistics," (a copy of which has been mailed to you for your information,) by which it is made the duty of this Board "*to have the general supervision of the State system of registration of* . . . *and to insure the faithful registration of the same in the several counties, and in the Central Bureau of Vital Statistics at the capital of the State.*" In the discharge of the important duty thus imposed upon it, the Board calls upon you to furnish a detailed report, after the form used in your official register, of such registration effected by you up to the first day of November, 1885, and each thereafter a similar detailed report of the registration effected during the . . . previous.

The report should be addressed as follows: "Superintendent of Vital Statistics, Central Bureau of Vital Statistics, State Capitol, Harrisburg, Pennsylvania."

By order of the Board.

BEJAMIN LEE, M. D.,
Superintendent of Vital Statistics.

RULES OF THE BOARD OF HEALTH OF THE CITY OF PHILADELPHIA.

ADOPTED AUGUST 2, 1882.

The Board of Health of the city of Philadelphia has had so long an experience that its rules and regulations possess an unusual value. They are here introduced as a means of conveying information to the municipal authorities of other cities and of boroughs throughout the State, and of their boards of health and sanitary committees, in regard to matters of detail which are only arrived at after years of experiment. It is the intention of the Board to issue a model form of rules and regulations for local boards. In the meantime, the following will doubtless be found of value.

BENJAMIN LEE,
Secretary.

I. The Board shall be organized on the first Monday in July, in each and every year, at ten o'clock, A. M., by the election of a President and Secretary, to serve for the ensuing year.

II. The Board shall hold stated meetings on Tuesday of every week, at twelve o'clock, M., from the first day of October to the first day of June, and daily, Sundays excepted, at twelve o'clock, M., from the first day of June to the first day of October; and it may hold special meetings when convened by order of the President or any two of its members.

III. All meetings of the Board shall be public, except in the case of a member objecting to the consideration of sanitary or quarantine business; such business to be postponed until all other matter has been acted upon.

IV. The hours for the transaction of the business of the Health Office shall be from nine o'clock, A. M., to three o'clock, P. M., daily, Sundays excepted.

THE PRESIDENT.

V. The President shall preside at the meetings of the Board, preserve order and decorum, and appoint the members of committees, unless otherwise directed.

VI. In the absence of the President, a chairman for the meeting shall be appointed.

THE SECRETARY.

VII. The Secretary shall keep accurate minutes of the proceedings of the Board and conduct such correspondence as the Board may direct and approve.

ELECTIVE OFFICERS.

VIII. At the first stated meeting in December of each year, there shall be elected a chief clerk, three assistant clerks, a chief registration clerk, four assistant registration clerks, a medical inspector, a chief inspector, eight nuisance inspectors, two collectors of vital statistics, one vessel inspector, two sworn measurers, a runner, a physician to attend the Muni-

cipal hospital, a steward and matron of the Municipal hospital, and a steward of the lazaretto; all of whom shall enter upon their duties on the first day of January following, and continue in office until discharged by action of the Board or others are elected in their stead.

IX. On the fourth Tuesday of January, annually, there shall be an election of vaccine physicians, as directed by an ordinance of city councils, approved the 11th day of July, A. D. 1860, entitled "An ordinance to provide for gratuitous vaccination."

X. At the first stated meeting in May, annually, there shall be elected one additional vessel inspector, to serve from the first day of June to the first day of October following.

Committees.

XI. The following standing committees shall be appointed annually at the first meeting after the organization of the Board:

1. A Sanitary Committee, consisting of five members, three of whom shall constitute a quorum.

2. A Lazaretto Committee, consisting of five members, three of whom shall constitute a quorum.

3. A Committee on Office and Library, consisting of three members.

4. A Committee on Burial-Grounds and the Registration Act, consisting of three members.

5. A Poudrette Committee, consisting of three members.

6. A Committee on Accounts, consisting of three members.

7. Four Committees on Nuisances, *i. e.*—

District No. 1, consisting of three members, comprising the First, Second, Third, Fourth, Fifth, Seventh, Eighth, Twenty-sixth, and Thirtieth wards.

District No. 2, consisting of three members, comprising the Sixth, Ninth, Tenth, Eleventh, Twelfth, Thirteenth, Fourteenth, and Fifteenth wards.

District No. 3, consisting of three members, comprising the Twentieth, Twenty-first, Twenty-second, Twenty-fourth, Twenty-seventh, Twenty-eighth, and Twenty-ninth wards.

District No. 4, consisting of three members, comprising the Sixteenth, Seventeenth, Eighteenth, Nineteenth, Twenty-third, Twenty-fifth, and Thirty-first wards.

XII. The different committees of the Board shall meet at half past eleven, A. M., of the last Tuesday of each month, for the purpose of examining and acting upon bills; and all bills shall be presented to the Board for its consideration upon that day, except when a special necessity exists for action at another time.

Sanitary Committee.

XIII. The Sanitary Committee shall be intrusted, subject to the general superintendence, orders, and by-laws of the Board, with the exercise

and performance of those powers and duties vested by law in the Board of Health, so far as relates to the prevention and spread of contagious diseases, (see section eighteenth of the general health law,) and likewise with the management of the Municipal hospital, and of such other temporary hospitals as the Board shall at any time order to be opened: *Provided*, That no important addition, alteration, or improvement be undertaken in relation to the same without the sanction of the Board.

XIV. The said committee shall hold stated meetings once every month, and special meetings upon the call of the chairman or of any two members thereof.

XV. At the first stated meeting subsequent to their appointment, the committee shall elect from among themselves a Secretary, who shall keep, in a book provided for that purpose, fair minutes of all their proceedings.

XVI. The committee shall cause every reported case of malignant or contagious disease existing within the limits of the jurisdiction of the Board of Health to be visited without delay, and shall be authorized to take such other measures in relation thereto as a majority of the members shall deem proper.

XVII. Whenever a report shall be received at the Health Office that a case of any malignant or contagious disease has occurred within the limits of the jurisdiction of the Board of Health, one of the members of the committee, or, should no member be present, the chief clerk of the Board, shall forthwith give notice thereof to the port physician, or to any other physician appointed to inquire into the nature of the case, who shall visit the same, and send to the Health Office, without delay, a written report in relation thereto. If the report of the physician be such as to require the attention of the committee, the clerk shall notify the members of the same immediately.

XVIII. When necessary, the Board shall appoint one or more physicians to perform the duties specified in the preceding section, and shall determine the compensation to be paid for the services of the same.

XIX. No fine shall be imposed on any physician for failure to report contagious diseases in compliance with the act of Assembly, except upon the report of the Sanitary Committee after an investigation of the case; and no fine shall be imposed in any case until the party accused of a violation of the law has been notified personally by an employé of the Board to appear before the committee to make answer to such charges as may be preferred.

XX. Whenever the Board, upon a representation from the Sanitary Committee, shall determine it to be expedient to provide and hold in readiness one or more temporary hospitals, the committee shall select the location of the same, secure the services of competent nurses, and otherwise put those establishments in condition to be opened with the least delay possible for the reception of patients, while the Board shall appoint one or

more physicians to attend the sick, and shall determine the compensation to be paid to them, as also the nurses for their services.

XXI. As soon as practicable after the Board has determined to provide temporary hospitals, the Sanitary Committee shall arrange and submit to the Board for its approbation, a plan of hospital operations, so that everything may be conducted economically and efficiently from the day the hospital shall be opened.

XXII. All requisitions for medicines and hospital supplies shall be made in writing upon the chairman of the committee, by the physician in attendance, and for all other articles necessary for the proper management of these hospitals a requisition in writing shall be made by the steward.

XXIII. No patient shall be admitted into the municipal hospital, or such temporary hospitals as may be provided, under any circumstances whatever, excepting upon an order signed by a member of the Board, the chief clerk, or the port physician, excepting pauper patients, who may be received upon an order of the guardians of the poor, endorsed by the chief clerk or a member of the Board. The rate of board to be paid by the patients shall be fixed by the Sanitary Committee, agreeably to the provisions of the health law. *

COMMITTEE ON ACCOUNTS.

XXIV. All bills, being first certified as correct by a majority of the committee by whose order the bills were incurred, shall be presented to the Board, and by it referred for examination to the Committee on Accounts, previously to an order being passed for their payment.

XXV. The monthly accounts of the Health Officer shall, when presented to the Board, be referred to the Committee on Accounts; and in the adjustment and settlement of the same, the committee shall compare the said accounts for each month, from the first day of June to the first day of October, annually, with the bills of inquiry transmitted to the Board by the lazaretto physician, with the monthly list of vessels permitted up by the Board without bills of inquiry, and with the monthly list of coasting vessels the health fees of which have been paid to the agents of the Board; and from the first day of October to the first day of June, annually, the Committee on Accounts shall compare the accounts of the Health Officer with the monthly list of vessels visited by the port physician, and the inspector's list of vessels subject to health fees, but not liable to a visit from the physician of the port.

XXVI. In reporting the monthly account of the Health Officer to the Board, the Committee on Accounts shall certify its agreement with the above specified vouchers; or should it be found not to agree therewith, they shall state the particulars in which the discrepancy occurs; and it shall be

* NOTE.—All rules relating to quarantine are omitted here, as they appear in another part of the report.

the duty of the Board to take such order thereon as it may deem just and proper.

COMMITTEE ON OFFICE AND LIBRARY.

XXVII. The Committee on Office shall have the charge and general superintendence of the building occupied as the health office, and of the fixtures, furniture, and library belonging thereto, together with the superintendence of all employés. They shall direct to be procured all the necessary supplies for the use of the said office, and for the accommodation of the Board at its meetings. They shall have all the officers elected by the Board sworn or affirmed to perform faithfully the duties assigned to them, and to keep private all business connected with the office.

COMMITTEE ON BURIAL-GROUNDS AND THE REGISTRATION ACT.

XXVIII. It shall be the duty of the Committee on Burial-Grounds and the Registration Act to assist the Health Officer with their advice in the publication of the bills of mortality and the annual statement of deaths, and generally to superintend the preparation and publication of the same, in detail, weekly.

XXIX. The committee shall always have charge of the registration department of the office, direct the necessary supplies, see that the clerks carry out the rules and other requisitions of the Board, and report to the Board any delinquencies of duty that may occur in this department.

XXX. They shall visit and examine all burial-grounds, cemeteries, and vaults within the city, when referred to them by the Board as nuisances, and report such action thereon as may be necessary.

POUDRETTE COMMITTEE.

XXXI. The Poudrette Committee shall have the power to carry out the laws relating to the cleansing of privies, and see that all penalties incurred by infringement of said laws, and approved by the Board, are collected by the Health Officer.

COMMITTEES ON NUISANCES.

XXXII. It shall be the duty of the Committees on Nuisances to examine all nuisances complained of within the boundaries of their respective districts, and referred to them by the Board, either directly, or after an examination and report by the inspectors, and to report to the Board what action may be necessary thereto.

XXXIII. Whenever the cost of removing a nuisance reported upon by the inspectors, or otherwise, shall exceed the sum of twenty-five dollars the case shall be referred to the committee on the district in which such nuisance is situated, who shall report to this Board at the earliest practicable moment the character of said nuisance and the probable cost of removing it; upon which report the Board shall take action, and instruct the Health Officer in regard to the same.

Health Officer.

XXXIV. The Health Officer shall examine the weekly accounts of the inspectors of vessels, of coasters subject to health fees, and shall report monthly to the Board the list of vessels visited by the said inspectors.

XXXV. He shall keep a cash-book, in which entries shall be made daily of the receipts as they occur, and pay over to the city treasurer, monthly, all moneys received by him, according to law.

XXXVI. He shall furnish the Board, at its first meeting in every month, a detailed statement of the receipts of the office during the preceding month.

XXXVII. He shall, whenever any bill is referred to him for collection, enter the same, together with a full description of the claim upon which the said bill is founded, upon a docket kept for that especial purpose, and note opposite to the said entry such action as may be taken, from time to time, in relation thereto.

XXXVIII. He shall, at the expiration of four months after date of said bills, turn over to the city solicitor for lien all claims remaining unpaid, and furnish the city controller with a transcript of the same.

XXXIX. He shall, in all business referred to him, and requiring legal proceedings, prosecute the same, but take such proceedings only in conjunction with the city solicitor or his deputy.

XL. He shall, whenever the Board shall direct him to have a vessel sent down to the lazaretto, see and be certain that the said order of the Board is immediately and strictly complied with.

XLI. He shall, whenever this Board directs a nuisance to be removed under his supervision, abstain from employing any person who is or may be under prosecution for any violation of the health laws. The same prohibition is hereby extended to any other agent of the Board to whom such duty may be assigned.

XLII. He shall award all contracts for abating nuisances within twenty-four (24) hours after the order of the Board has been placed in his hands, and shall impose a condition in said contracts that the work must be commenced within forty-eight (48) hours after acceptance and prosecuted continuously to completion. He shall strictly enforce the penalties provided for under the act of 1818.

XLIII. He shall from time to time furnish to the Poudrette Committee a list of the names of the licensed cleaners, with the number of their licenses, and shall also report to them at any time all information given him, or any knowledge he may have obtained respecting defalcations, breaches of faith, or violations of the law or rules on the part of licensed cleaners or the men in their employ.

XLIV. He shall keep a book, in which he shall record all cases of contagious or infectious diseases reported to the office, with the date of the report, the location and name of the patient, the disease under which he labors, and the name of the physician in attendance.

XLV. He shall, when any notice of contagious or infectious disease is received at this office, notify, as far as possible, all the inmates of the house in which such disease occurs within twenty-four (24) hours of the receipt of said report: *Provided*, That nothing in this rule is intended to lessen in any way the responsibility of the physician in charge of the case.

XLVI. He shall have the general superintendence of the registration department, and see that the clerks carry out the instructions of the Board, and shall report any delinquencies on their part to the Committee on Registration.

XLVII. He shall publish weekly over his signature the returns of deaths as made to the office, in such form and manner as shall be directed by the Board, and annually prepare for publication a report of the births, marriages, and deaths recorded in the office during the year, to be submitted to councils and the mayor through the Board of Health, in accordance with the registration act.

THE CHIEF CLERK.

XLVIII. The chief clerk shall transcribe the minutes taken by the Secretary into a book provided for the purpose.

XLIX. He shall insert in a letter-book copies of all communications written by the Secretary to the officers of the lazaretto, and also keep copies of all agreements and letters made or written by order of the Board, and of such other documents as the Board may direct.

L. He shall copy, in a book to be provided for the purpose, all resolutions, not of a temporary nature. that may be hereafter passed by the Board, with marginal notes.

LI. He shall notify the chairmen of all committees of the business referred to them by the Board. He shall also notify all elected officers of their election.

LII. He shall grant licenses to clean privies, under the rules of the Board, when so directed, and for each license he shall receive the sum of fifty dollars, and he shall renew the said license from time to time, as the Board may direct, upon the payment of the like sum.

LIII. He shall grant orders for the admission of patients into the Municipal hospital, (he being first furnished with the usual certificate of a physician,) and shall require satisfactory security for the payment of the board and medical attendance of the said patients, in cases where they are able to pay for the same.

LIV. He shall furnish the Health Officer a true copy of all resolutions passed by the Board concerning the duties of said officer.

LV. He shall place in the hands of the Health Officer for execution all orders to abate nuisances, where the owners or agents have failed to comply with the notice of the Board: *Provided*, The cost of removing any such nuisance shall not exceed the sum of twenty-five dollars: *Provided*, That this restriction shall not apply to the cleaning of privy-wells.

LVI. He shall keep an accurate account of all carriages ordered for the different committees, and register the name of the member who gives the order and the date thereof. He shall also keep an accurate account of all railroad tickets issued to members and employés of the Board, and register the name of the recipient and the date of issue in a book kept for that purpose.

LVII He shall keep the rough minutes and the minute-book under lock and key in the safe of the fire-proof, unless they be in use, and allow no access to them except to a member or on an order from the Board.

LVIII. He shall officially notify the lowest bidders for supplies for the department of the award of contracts immediately after such award, and retain a copy of the notice in the office; an acknowledgment to be required of the receipt of such notice.

LIX. He shall have the entire superintendence of the office, answer all questions appertaining to the business of the Board and office, keep the keys of the fire-proof, and furnish the Office Committee with a list of such supplies as may be needed; keep in a book an account of all articles furnished to the Health Officer and the employés of the office; report to the Committee on Office any delinquency of duty on the part of those in the employ of the Board; preserve good order in the office, and perform such other services as the Board may direct.

ASSISTANT CLERKS.

Bill and Warrant Clerk.

LX. It shall be the duty of the bill and warrant clerk to audit and enter all bills submitted to the Board for work done and materials furnished, make out the pay-roll of employés and contractors, and, when approved, draw warrants for their payment. He shall once every month furnish to the city controller a return of all warrants drawn, and shall submit to the Board, or Committee on Accounts, a statement of the condition of the various items of the appropriations whenever required. He shall discharge the duties of the chief clerk during the absence of that officer.

Permit Clerk.

LXI. It shall be the duty of the permit clerk to issue permits to clean privy-wells, in accordance with the act of March 16, 1855, and the rules of the Board relating thereto.

LXII. He shall refuse permits to cleaners whose licenses have been suspended, or upon whom fines have been imposed for violating the pourette laws, until said suspension is revoked or fines are paid.

LXIII. He shall issue permits for the removal of dead bodies from one cemetery to another, or from one grave or vault to another in the same cemetery, within the bounds of the city, quarantine season excepted, unless by special order of the Board, and provided death did not occur from contagious disease. In all cases, before issuing the permit, he shall require

a certificate containing the name, age, cause of death, and date of death of the deceased, which may be obtained from the chief registration clerk.

LXIV. He shall, on application being made for a permit to land hides, direct the vessel inspector to examine said hides and report as to their condition. Should they be found sound, the permit so applied for shall be issued; but should they be reported unsound, the application shall be referred to the Board for action.

LXV. He shall issue permits for the landing of vegetables and fish, when in sound condition (during quarantine season,) to the captains or owners of all vessels arriving at the wharves on the river Delaware, for which permit a charge of fifty cents shall be made.

LXVI. He shall issue to captains and owners of steamboats plying regularly on the river Delaware, upon application and filing a bond conditioned not to land any unsound fish or vegetables, a permit for the season, upon payment of five dollars.

LXVIII. He shall keep a record of all moneys received by him in his official capacity in a book provided for that purpose, and report the same before 12 o'clock M. every Saturday to the health officer.

LXVII. He shall, during the absence of the health officer, discharge the duties pertaining to that office.

Recording Clerk.

LXIX. It shall be the duty of the recording clerk to receive all complaints of nuisances, having the name and residence of the complainant thereto attached, and place them in the hands of the inspectors for examination. He shall record the same, when returned by the inspector, in a book kept for the purpose, specifying the date, the location, the character of the nuisance, and the name of the inspector, and make out a duplicate notice of that served upon the owner or agent. He shall transmit to the chief clerk all notices that have not been complied with, and shall keep on file, in numerical order, the complaints and return of the inspector, together with any special resolution or action of the Board relating thereto. He shall submit to the Board at each stated meeting, for confirmation or otherwise, the action of the inspectors upon complaints of nuisances, and shall report to the chief clerk any neglect of duty upon the part of the inspectors in making their examinations and returns. He shall notify committees and witnesses to attend meetings whenever so directed by the chairman thereof. He shall append to all notices for removing nuisances that part of section twenty-seventh of the general health law, imposing a penalty for neglect or refusal to remove such nuisances.

REGISTRATION CLERKS.

The Chief Registration Clerk.

LXX. The chief registration clerk shall have the entire charge of all books and papers belonging to the registration department. He shall see

that all entries are accurately made, and the books kept in good order and condition.

LXXI. He shall examine carefully the returns of births, marriages, and deaths, and should any omission or errors occur therein, it shall be his duty to notify the parties making said returns to make necessary corrections, and any neglect or refusal on their part shall be reported to the Board through the Committee on Registration.

LXXII. He shall keep, in a book provided for the purpose, a record of the names and residences of physicians, practitioners of midwifery, clergymen, clerks of meetings, aldermen, sextons, undertakers, and others required by law to make returns to the health office; and should any person or persons so required, when notified, neglect or refuse to call at the office and record their names and residences, he shall report the fact to the Board, in writing, through the Committee on Registration.

LXXIII. He shall fill up all permits for the removal of all dead bodies from the city for interment, having first obtained the certificate of the attending physician or the coroner, accompanied by that of the undertaker, together with the approval of the Health Officer, whose signature shall, in all cases, be appended thereto.

LXXIV. He shall make out and deliver, under the approval of the health officer, all transcripts of births, marriages, or deaths applied for from the registration records, with the name of the Health Officer appended.

LXXV. He shall have charge of the books containing the blanks for birth, marriage, and death certificates, and deliver them, when applied for, to such persons as are required by law to make returns: *Provided always*, That the names and residences of the applicants are on record in the office, or shall be registered at the time of receiving the blanks delivered by him, together with the date of delivery and the name and residence of the receiver.

LXXVI. He shall assist the Health Officer in the preparation of his weekly statement of deaths, and of his annual report of births, marriages, and deaths.

LXXVII. He shall at all times during office hours give to lawyers, physicians, and clergymen access to the registration books, and allow them to take notes of the contents; and to all other persons desirous of examining into the merits of the system, he shall furnish every necessary facility.

LXXVIII. For all permits to remove dead bodies from the city for interment, and for all certified transcripts from the registration record, there shall be a charge demanded of fifty cents, to be paid over to the Health Officer.

LXXIX. He shall furnish to the collectors of vital statistics every information necessary to facilitate their work of collecting returns, and report to the Committee on Registration any neglect or refusal on their part to discharge faithfully the duties assigned to them.

The Assistant Registration Clerks.

LXXX. The subordinate clerks in the registration department shall be required to perform such duties as may be assigned to them by the Committee on Registration and the chief clerk, in connection with the registration of births, marriages, and deaths.

COLLECTORS OF VITAL STATISTICS.

LXXXI. It shall be the duty of the collectors of vital statistics to collect the monthly returns of births from the practitioners of midwifery, make weekly reports upon the record book of the number of physicians visited, and also the number of births collected, and under the direction of the Committee on Registration and chief registration clerk to perform such other services as may be required of them, in order to carry out the law for the registration of births, marriages, and deaths. In the event of any person or persons refusing or neglecting to make out and furnish their returns, the collectors of vital statistics shall report their names and residences to the chief registration clerk. When not engaged in this duty they may be called upon for other services.

Special Rules relating to Certificates of Death in cases unprovided for in the Code of Regulations.

LXXXII. When a patient suffering from small-pox or other contagious disease dies while being taken to the hospital, the physician in charge shall fill up the certificate with such information as he may have; if incomplete, he shall send such certificate to the health officer to supply the wanting information in case the body is buried in the hospital grounds. This certificate, if complete, and the undertaker's certificate, filled up in every case by the steward, shall (if the body is buried in the hospital grounds) be sent direct to the registration office.

LXXXIII. Whenever a certificate of burial, incompletely filled up, is received at the registration office (especially when received from the Municipal hospital) the chief registration clerk shall send it to the Health Officer for the purpose of obtaining the desired information.

LXXXIV. Whenever a person dies with small-pox or other contagious disease, without the attendance of a physician, either the coroner or the Health Officer must furnish a certificate of death, as provided by law, before the body shall be permitted to be buried in the hospital grounds. Such certificate must be sent to the hospital with the body, and the steward shall fill up the undertaker's certificate, and return both certificates to the registration office, and he shall likewise keep a careful record of all such cases. He shall do likewise in all cases dying in the hospital, when the bodies are interred in the hospital grounds.

MEDICAL INSPECTOR.

LXXXV. All questions requiring special medical knowledge in their investigation, shall be referred to the medical inspector. He will be re-

quired to be present at the office during all meetings of the Board, and at all such other times, between the hours of 9, A. M. and 3, P. M., daily, as his duties will permit.

Chief Inspector.

LXXXVI. It shall be the duty of the chief inspector to have general supervision of investigating and reporting upon all nuisances, as directed by the Board. He will be required to be present at the office during all meetings of the Board, and at all such other times, between the hours of 9, A. M. and 3, P. M., daily, as his duties will permit.

LXXXVII. He shall see that all special orders of the Board are faithfully obeyed, and report to the Board any neglect of duty upon the part of the inspectors. And it shall be his duty, assisted by the other inspectors, to see that all the rules of the Board touching bone and horse-boiling establishments, slaughter-houses, and other nuisances, are enforced, and he shall make reports monthly on these subjects.

Nuisance Inspectors.

LXXXVIII. It shall be the duty of the inspectors to examine and report upon all complaints of nuisances placed in their hands within twenty-four hours thereafter.

LXXXIX. They shall, whenever any nuisance may be found, immediately serve a notice upon the owner or agent of the premises upon which such nuisances exist, to abate said nuisance. In the event of the owner or agent not being found after diligent search, the notice shall be left upon the premises, and the fact reported and entered upon the record.

XC. They shall notify the owners or agents of properties upon which nuisances exist, arising from full, foul, or leaky privy-wells, upon the service of notice, to remove the same; that the penalty provided under the act of Assembly will be strictly enforced.

XCI. They shall, in making their returns, give an accurate description of the propery or properties whereon the nuisance exists, together with the nature, character, or cause of the nuisance.

XCII. They shall strictly follow the schedule of time allowed in service of notices for the abatement of nuisances, when not otherwise specified by resolution of the Board.

XCIII. They shall, at the expiration of notice, (Sundays and days set apart as holidays excepted,) reëxamine said nuisance, and report what action has been taken in the premises.

XCIV. They shall, with all returns of non-compliance with notice, (except in the case of privy-wells,) present an estimate of the probable expense of removing said nuisance, and also give the offset of all privy-wells, taken by accurate measurement.

XCV. They shall serve the bills for removing nuisances upon the owners or agents of the premises on which such nuisances are situated, and, if not found after careful inquiry, they shall leave the bills upon the premises.

XCVI. They shall carefully abstain from giving, or causing to be given, to any privy-cleaner or cleaners, their agents or others, any information respecting nuisances reported to the Board, or any complaint whatsoever, or respecting the action of the Board relative to a nuisance or nuisances. Such offense shall be considered a misdemeanor in office, and render the inspector so offending liable to immediate dismissal.

XCVII. They shall, whenever complaints are made and verified, of dead animals lying on private property, have them removed by burial or otherwise, under the direction of the Health officer: *Provided*, The cost of removal of each animal does not exceed the sum of fifty cents.

XCVIII. They shall report daily at 12 o'clock, M., and confine themselves to their own department in the office until 1.30 o'clock, P. M., unless excused or otherwise directed by the chief clerk.

XCIX. They shall strictly comply with the above rules, and any dereliction upon their part will be cause for immediate dismissal.

INSPECTORS OF PRIVY-CLEANING.

C. There shall be detailed by the Board two inspectors, whose duty it shall be to see that the poudrette laws, and the rules and regulations of the Board relating to privy-wells, are strictly enforced, and report to the Board the name of any cleaner or company violating said rules. They shall present themselves at the office daily at 10 o'clock, A. M., and obtain from the permit clerk the location of wells to be cleaned that day. They shall report to the Board any delinquencies of the cleaners, whose apparatus or appliances are not in conformity with the rules of the Board, and also any violation of the poudrette laws, and also make a monthly report to the Board, giving in detail the results of their observations in regard to the cleanliness, condition, and efficiency of the apparatus in use, and furnish such other information as will acquaint the Board fully of the manner in which the work is performed.

INSPECTORS OF VESSELS.

CI. It shall be the duty of inspector's of vessels to see that no hides, fish, or vegetables, or any sick person is landed from any vessel in either river, without a special permit of the Board of Health. They shall likewise demand and collect from the captains, owners, or consignees of all vessels arriving in either river during quarantine season, which are not required to stop at the Lazaretto, the health fee with which by law they are respectively chargeable, and pay the same over to the Health Officer weekly.

CII. They are required to report all violations of the rules of the Board relative to the cleaning of sturgeon and other fish in the vicinity of the wharves or in the docks, during quarantine season.

CIII. They shall, when directed by the chief clerk, examine all hides, and report whether the same be in a sound or unsound condition.

CIV. They shall be required to make a report every Tuesday of the work

done by them during the previous week. When not engaged in their specific duties, they shall report to the health office for such duty as may be assigned them.

MESSENGER.

CV. The messenger shall attend to keeping the office, rooms, furniture, etc., of the Board always in good and complete order, perform errands for the members, Health Officer, chief clerk, and assistant clerks, and such other duties as the Board may from time to time direct.

CVI. He shall not leave the office during business hours without permission of one of the above-named officers.

MEASURERS.

CVII. The measurers shall, under the direction of the Health Officer, measure all wells cleaned by order of the Board, and shall furnish said officer with a duplicate copy of an account of the measurement. If the cost of cleaning said wells exceeds the sum of twenty dollars, they shall receive as compensation therefor a sum equal to six per cent. of the amount of the bills. In all other cases the sum of one dollar only shall be paid equally by the cleaners and the owners of the property from whence the nuisances are removed. They shall not grant a certificate of measurement until the rule of the Board "requiring the entire contents of the well to be removed," has been complied with, unless otherwise ordered by the Board.

CVIII. They shall refuse a certificate of measurement, unless furnished with the original order and permit to clean said well.

CIX. They shall present the Health Officer with the certificate of measurement, accompanied by the original order and permit for cleaning said well, and within forty-eight hours after the receipt of the order from the cleaner.

PORT PHYSICIAN.

CX. The port physician shall file with the chief clerk of the Board on the last Wednesday of every month, from the first day of October to the first day of June, a list of all foreign vessels boarded by him during the month.

CXI. He shall be subject to the call of the Board at all seasons of the year, for the purpose of visiting and examining infected vessels or houses, and persons suspected of laboring under malignant or contagious diseases.

CXII. He shall not perform his duty by deputy, unless by the express approval of the Board.

EXPENSE OF REMOVING NUISANCES.

CXIII. All bills submitted to the Board for removing nuisances, not exceeding twenty-five dollars, shall be itemized and a charge made for each separate item. A charge shall be made for every incidental expense incurred. The district surveyor shall furnish the Board with bills as per

measurements for all contracts wherein he is required to give the lines and levels, and make out bills divided proportionately against the properties chargeable with the cost of abating said nuisance. The price to be charged by this Board for cleaning privy-wells shall be twelve cents per cubic foot.

CXIV. In all cases, until otherwise ordered, where nuisances are directed to be removed forthwith, if the same are not removed within twenty-four hours, the Health Officer is hereby directed to have the same done at the expense of the owner, etc., etc.,

CXV. In all cases of nuisances to be removed by the owners of property, who have been notified to that effect by this Board, it shall be understood that should he or they commence the removal within the time prescribed in the notice, the Board will not interfere.

DISINTERMENT OF BODIES.

CXVI. The removal of any body from its place of original interment is declared to be a nuisance, and is prohibited, unless the same be done under the direction and by permission of the Board. For every permission granted for such removal, the permit clerk shall receive, for the use of the city, fifty cents.

CXVII. The above rule applies as well to the removal of a body from one grave or vault to another in the same cemetery, as to its removal to another burial-ground.

CXVIII. The removal of dead bodies from any of the burial-grounds situated within the built-up portions of the city during quarantine season is forbidden.

MISCELLANEOUS.

CXIX. No communication shall be received by the Board from its officers or servants, or from any other person whatever, unless the same be in writing and directed to the Board, or through the President or Secretary thereof officially.

CXX. When any nuisance is referred to a committee with power to act thereon, the said committee shall report in writing what action they have taken in relation to it.

CXXI. Each standing committee shall direct all expenditures that may be necessary to carry out the object of its appointment: *Provided*, Each of said expenditures shall not exceed twenty-five dollars, and no contract shall be made for any amount over that sum, unless first approved and directed by the Board.

CXXII. The minutes of all committees shall be read at any meeting of the Board, upon the call of a member.

CXXIII. *Police officers, constables, and watchmen are enjoined, and citizens are respectfully desired* to give information to the Board of Health of any violation of the health laws, or of the rules and regulations of the Board, so that the sanitary measures adopted by the latter to ensure the cleanliness and health of the city, may be fully carried out, and all offenders promptly punished.

Licensed Privy Cleaners.

CXXIV. On and after the 15th day of April, 1876, no part of the contents (except substances not soluble in water) of any privy, vault, sink, or cesspool within the limits of the city of Philadelphia, shall be removed therefrom, nor shall the same be transported through any of the streets, avenues, or public places of said city, except the same be removed and transported by means of air-tight apparatus, or in such manner as shall prevent the contents of said privy, vault, sink, etc., from being agitated or exposed in open air during the said process of removal or transportation.

CXXV. Applications for licenses to clean privy-wells, vaults, sinks, or cesspools must state the name of the applicant, his residence and place of business, the names of the sureties proposed to be given on his bond, their occupations and places of residence, the number of air-tight tanks, pumps, trucks, horses, and other appliances to be employed by said applicant, and the accommodations he has for keeping his apparatus when not in use. They must also state that the applicant is the *bona fide* owner of the number of the apparatus, horses, etc., named, and that he is not in collusion or combination with any person or persons to deceive and defraud the Board, and further, that his tanks are air-tight, and securely constructed in all respects.

CXXVI. Upon every such application being referred to the Health Officer, he shall make the necessary inquiries and examinations, and report to the Board thereon as early as practicable; and upon his report that the applicant is of good moral character and *bona fide* the owner of the number of apparatus, horses, etc., stated by him, that the tanks are air-tight, and properly and securely constructed, and that the applicant has the necessary accommodations for keeping his apparatus under cover, or from public view, when not in use, the Board may, if fully satisfied with his bond, and as to the fulfilment of the requirements of the laws and of the rules of the Board, direct the chief clerk to issue a license (or renewal thereof) to him, in conformity with the laws and rules governing the subject; which license shall bear date of the day on which it is ordered to be issued; and every issue of license and renewal thereof shall be reported to the Board at the next meeting thereafter.

CXXVII. Whenever a license or renewal thereof is granted the Health Officer shall register in a book the name, residence, and place of business of the party so licensed, the number of his license, the number of tanks, pumps, trucks, horses, etc., to be employed by him, the names, residences, and occupations of the sureties: *Provided, however*, That before any license or renewal thereof is furnished by the chief clerk, the Health Officer shall certify to him that each and every tank and truck has permanently painted on both sides thereof the proper name of the licensed party, and the number of his license, plainly and intelligibly displayed, which name and number shall always be kept clean and exposed to public view when

the tanks, etc., are in use, and subject to the inspection of any police officer or citizen at all times.

CXXVIII. The period for the termination of licenses for cleaning privy-wells, vaults, sinks, etc., shall be the 31st day of December in each and every year; after which date, however, licenses may be granted upon the full payment of fifty dollars by the applicant, and his compliance with the law and the rules of the Board.

CXXIX. A permit for emptying or cleaning a privy-well, vault, sink, or cesspool, shall be issued in the name of the licensed party applying for the same, stating therein the location of the premises, and the name of the owner, agent, or occupant thereof so employing him. It must be obtained before said cleaning, and shall specify the day for the removing of the contents, but may be extended for two days longer, if, in the judgment of the clerk, the work was deferred or postponed in consequence of some unavoidable circumstance. Every permit shall be returned to the health office on the day succeeding its termination; and, if not so returned, the clerk shall have authority to refuse any further permits to the delinquent cleaner until the rule is complied with; and, if not returned within three days after its termination, he shall report the same to the Board, who shall take such action thereon as may be deemed proper.

CXXX. When the cleaning of a privy-well is commenced it must be prosecuted continuously to completion. Privy-wells ordered to be cleaned by the Board must be emptied to the bottom; the failure of the cleaners to obey this rule being of itself sufficient to suspend their licenses.

CXXXI. No privy-well, vault, sink, or cesspool shall be cleaned, and the contents thereof removed or transported after sunset or before sunrise in any day.

CXXXII. Every person, persons, or company licensed to clean privy-wells, sinks, etc., shall have a pit for depositing the contents of said wells, sinks, etc., (the location to be approved by the Board,) and said pit shall not be located within two hundred yards of any public road, lane, or street, and shall be screened from public view.

CXXXIII. The Health Officer shall, from time to time, furnish to the Poudrette Committee a list of the names of the licensed cleaners, with the number of their licenses, and shall also report at any time any information given him, or knowledge he may have of defalcations, breaches of faith, or violations of the law or rules on the part of any licensed cleaner, or the men in his employ.

CXXXIV. It shall be deemed unlawful for any licensed cleaner to make any contract or engagement for the cleaning of a privy-well or sink, except with the owner, agent, or occupant of the premises upon or at which the work is to be done; and if at any time it shall be ascertained that a cleaner is violating this rule, the clerk shall refuse him a permit, and the Board may revoke his license.

CXXXV. Any violation of law, or of the rules of the Board, will, in

addition to the punishment imposed by acts of the Legislature, subject the offender to a forfeiture of his license, or a suspension thereof, at the option of the Board.

CXXXVI. Every party licensed shall receive with his license a printed copy of the rules and extracts of laws on the subject, so that he cannot set up the plea of ignorance of their existence.

CXXXVII. Permits shall be submitted for examination at the place where the work is being done, when required by inspectors, police, and other properly qualified officers.

CXXXVIII. 1. The apparatus for the removal of the contents of privy-wells, vaults, sinks, etc., shall consist of pumps, tanks, hose, deodorizing furnaces, or other efficient deodorizing apparatus, tents or hoods, dunnigans or barrels, and trucks as hereinafter described.

2. The pumps shall be suitable for the purpose required, and shall have valves not less than four inches internal diameter, which will allow obstructive rubbish and some solid excrementitious matter to pass freely through the pump, and be forced through the hose to the tank.

3. The hose shall be of rubber, or some other material impervious to water, and shall have an inside diameter of not less than four inches, and shall be well secured at the joints by efficient couplings. No strainer or other device to prevent the free ingress of material shall be used while the induction end of the hose is in the well or vault.

4. Each tank shall have its capacity measured and the number of cubic feet it contains stamped or branded on the rear end by a sworn measurer of the Board of Health. Each tank shall have an indicator conspicuously placed on the rear end, which shall correctly indicate the quantity in the tank.

5. The gases escaping from the tank while being filled shall be thoroughly deodorized. If by fire, a suitable furnace protected by the intervention of a screen or other suitable device between the fire and the ignitable gases in the tank, to prevent explosion, shall be used.

6. The tent or hood shall be made of canvas, and so constructed as to give space for one or more barrels, and so erected as to form a close joint with the walls of the privy building and the pavement or ground, completely enclosing the door, and so secured that no odor can escape except through the air-hose.

7. The air-hose shall be made of some air-tight material, expanded by a spiral wire, or other suitable device, and shall have an inside diameter of not less than five inches, and shall be at least ten feet in length. When in service the air-hose shall be attached with a tight joint to the tent, at a point not less than four feet from the ground, by one end, and the other connected by a practical air-tight joint with the deodorizing apparatus or furnace when used, so that no air can enter below the grate of the latter except through the air-hose from inside of the tent.

8. The pitting furnace shall be so constructed that the air-hose connec-

tion shall give its only supply of air below the grate, and shall always be full of burning material, while in operation, to insure a strong draft from the inside of the tent.

9. The dunnigans or barrels shall be water-tight, and have their capacity measured and branded or stamped thereon by a sworn measurer of the Board of Health. The lid shall be of iron, secured to the barrel by clamps or cams, and made tight by means of a rubber gasket between the lid and the chime.

10. The trucks for conveying the dunnigans or barrels and the pump and hose shall be suitably constructed, and the name and number of the licensee distinctly painted thereon.

11. The entire apparatus and appliances shall at all times present a clean appearance, be free from obnoxious odors, and always in good and efficient working order. The workmen shall be well instructed in their duties and orderly while in the performance of their work.

12. No license for cleaning privy-wells shall be issued until each licensee shall contract with the Board of Health to do the work for the Board and for citizens at rates not to *exceed* twelve (12) cents per cubic foot, upon penalty of forfeiture of the license.

13. No part of the contents of any privy-well shall be removed by the *pitting* process, except in cases where it is impossible to remove the same by pumping.

MUNICIPAL HOSPITAL.

The Physician in Charge.

CXXXIX. The physician in charge shall visit the hospital daily, or oftener, if the circumstances of the patients shall require it.

CXL. He shall have entire direction of the medical treatment of the patients, and the general direction and management of the hospital, subject to such rules and regulations as the Sanitary Committee may from time to time impose.

CXLI. All requisitions for medicines and hospital supplies shall be made by the physician in charge, in writing, upon the chairman of the Sanitary Committee; and for all other articles necessary for the proper conducting of the institution a requisition in the same manner shall be made by the steward.

CXLII. The physician in charge shall have the control of the nurses, and shall promptly report to the Sanitary Committee any irregularity committed by them, and shall suspend them if necessary, and report the facts to the Sanitary Committee for action thereon.

CXLIII. He shall record, in a book to be provided for the purpose, the name of every patient, with the date of admission, age, sex, color, nativity, occupation, disease, and the date of discharge or death, as the case may be, and such other matters as he or the Sanitary Committee may consider important or necessary.

CXLIV. He shall make a weekly report to the Sanitary Committee or

Board of Health, stating the number of patients admitted since the last report, with the disease, recoveries, deaths, and such other information as he or the Sanitary Committee may think requisite.

CXLV. He shall also make a monthly report to the Sanitary Committee or the Board of Health, which shall contain a summary of the weekly reports, and such other matter as he or the Sanitary Committee may consider requisite.

The Steward.

CXLVI. Before entering upon the performance of his duties, the steward shall enter into a bond, with security, to be approved by the Board, in the sum of one thousand dollars, conditioned for the faithful performance of his duties. He shall have no right of property in or to anything at the hospital, except the same shall be confirmed to him by special action of the Board; he shall remove or dispose of no part or parts of the fruits or produce of the grounds of the said hospital under his charge, except for his own immediate use, without written permission of the Sanitary Committee; and, further, he shall deliver over to his successor in office, or such other person as may be designated by the Board, all property, goods, chattels, or produce belonging to or purchased by the Board, as the same are or may be confided to his care, in the same condition as they are or may be at such times, (reasonable use, wear and tear, fire, or unavoidable injury excepted.)

CXLVII. The steward shall reside permanently at the hospital, and be allowed, for himself and family, such apartments in the building as the Sanitary Committee shall designate.

CXLVIII. He shall not use, or allow to be used, the horses, vehicles, or other property of the Board, except for the legitimate purposes of the hospital, or by permission of the Sanitary Committee.

CXLIX. The buildings, grounds, and property of the Board at the hospital shall be under the general charge of the steward, subject to such general rules and regulations as the Sanitary Committee may from time to time impose.

CL. He shall require all persons connected with the hospital to perform such duties as may be assigned them, and, in case of their failure, refusal, or neglect to perform such duties, he shall suspend them from all duty, and report the facts to the Sanitary Committee for action thereon.

CLI. He shall require that the hospital shall at all times be kept scrupulously clean; that the clothing and bedding of patients shall be frequently changed and thorough ventilation maintained; and, to accomplish these ends, he shall have authority, subject to the approval of the physician in charge, to prescribe the duties of all nurses and attendants, and indicate the time and manner in which such duties shall be performed.

CLII. He shall take charge of and inventory the effects of all patients that may be admitted into the hospital and return them, after having been disinfected, to the owner when discharged; or, in the event of the decease

of the patient, a report of such effects shall be made to the Sanitary Committee.

CLIII. He shall superintend the work of disinfecting clothing, beds, bedding, etc., and see that it is efficiently done, and must enforce the rule—that every patient, immediately before leaving the hospital, must take a bath and be supplied with non-infected clothing.

CLIV. The steward shall make an inventory, in a book provided for the purpose, of all articles sent to the hospital for purification, in which shall be noted the premises from which removed, the condition in which received, the disposition made of them, when received, and when returned. All such articles must be purified as soon as possible after being received at the hospital.

CLV. Great discretion and judgment must be exercised by the physician in charge and the steward in permitting persons to visit the hospital, and in no case shall visits to the wards be allowed, unless under circumstances of a very special nature.

CLVI. The steward shall have authority to select such individuals as he may think proper to take charge of the various departments—bakery, laundry, etc.—and shall report such action to the Sanitary Committee.

CLVII. He shall invariably treat the patients with kindness and civility, and never suffer any degree of cruelty, insolence, neglect, or unkindness on the part of the nurses or servants towards them to pass unnoticed. He shall also see that the nurses and attendants treat the sick with care and humanity, that the diet directed by the physician in charge is properly prepared and supplied, and generally that the orders of the physician in relation to the treatment of the sick and the management of the wards and departments more especially under his charge are fully and regularly exercised.

CLVIII. He shall in no instance permit intoxicating liquors or any provisions to be given to the patients, except by direction of the physician in charge.

CLIX. He shall see that all fires and lights are extinguished in every apartment of the premises under his control before ten o'clock at night, excepting such as may be absolutely necessary, and these he shall leave under proper care.

CLX. Whenever a patient dies in the hospital, the steward shall have his or her body decently interred in the burial-ground of the institution; see that such of his or her clothing as requires it is, within twenty-four hours after the decease of the patient, properly washed, disinfected, ironed, and put away, or destroyed when so directed by the physician.

CLXI. So soon as a patient is discharged from or dies at the hospital, the steward shall make out and transmit forthwith to the Board a bill for his or her board and attendance, at the rate of one dollar for each day the said patient has remained at the hospital, counting the days of entrance and departure each one day, and, in the case of his or her death, an addi-

tional sum of five dollars for burial expenses. He shall also be required to make a similar record of patients who are unable to pay their board, and transmit a copy to the Board at the end of each quarter.

CLXII. He shall see that the nurses and other employés are suitably provided for as regards board, lodging, and washing.

CLXIII. He shall be required to communicate, in writing, to the Board or Sanitary Committee, whatever alterations, improvements, or observations he may consider will have a tendency to promote the interests of the Board, preserve the grounds and the property at the hospital, or increase the comforts of those under his care.

CLXIV. On the first day of May and November, annually, the steward shall take an inventory of all the household goods and other property belonging to the hospital, and shall record said inventory in a book specially provided for the purpose, and shall present a copy of the same to the Sanitary Committee.

CLXV. He shall make out and transmit to the Sanitary Committee, at the close of each month, the pay-roll of all nurses and attendants employed at the hospital.

CLXVI. No patient shall be employed in the work of the house without the consent of the Sanitary Committee.

The Matron.

CLXVII. The matron shall take care that each patient has the diet prescribed, superintend its preparation, and have it served at regular stated hours.

CLXVIII. She shall have charge of the bedding, bed-clothing, and such wearing apparel as may be provided for the patients; shall have general supervision of the laundry, and shall see that cleanliness is maintained throughout the hospital.

CLXIX. She shall have charge of the table for the steward and other officers, and for the employés of the hospital, and, in conjunction with the steward, shall have control of the servants and nurses.

RULES OF ORDER.

CLXX. The order of business shall be as follows:

1. A quorum, (*i. e., five members*) being present, the President shall take the chair, and call the Board to order.

2. The minutes of the last meeting shall be read, if necessary corrected, and adopted.

3. Communications may be presented and disposed of: *Provided, however*, That from the first of June to the first of October, business appertaining to the Lazaretto shall have the precedence.

4. Reports of committees may be made and considered.

5. Resolutions may be offered and discussed.

CLXXI. When a member is about to speak in debate, or to communi-

cate any matter to the Board, he shall rise and respectfully address himself to "Mr. President," confining his remarks to the subject before the Board.

CLXXII. Those members desiring to be heard upon any motion or resolution before the Board, shall not be allowed to speak more than five minutes on any one subject, nor shall they speak oftener than twice on any motion or resolution.

CLXXIII. The President shall not speak on any question before the Board while in the chair; should he desire to engage in debate, he must call another member to the chair.

CLXXIV. If any member in debate transgresses the rules of the Board, the President shall, or any member may, through the President, call him to order; the member so called shall immediately sit down, unless permitted to explain.

CLXXV. On questions of order there shall be no debate, except on an appeal from the decision of the President, sustained by two members.

CLXXVI No member, when speaking, shall be interrupted unless by a call to order, or by a member to explain.

CLXXVII. No member of the Board shall leave his seat during the session of the Board, unless by permission of the chair; and no member shall leave the room whilst another is on the floor.

CLXXVIII. Every motion, made and seconded, shall be distinctly announced from the chair before any debate on it can take place; and, when the discussion is closed, the President shall put the question in the following form; "As many as are in favor of the motion, say Aye;" and, after the affirmative is expressed, he shall reverse the question thus: "As many as are of the contrary opinion, say No." But the President, or any member, may call for a division of the Board, when the President shall again put the question distinctly in the following manner: "As many as are in the affirmative will rise;" and when he has announced the number in the affirmative, he shall put the opposite side of the question: "As many as are in the negative will rise." Two members may require the yeas and nays on any question, and have them entered on the minutes, but the President shall always vote last.

CLXXIX. A motion shall be committed to writing at the request of any member.

CLXXX. A motion may be withdrawn by the mover and seconder before amendment or decision, and, if withdrawn, the proceedings had thereon shall not appear on the minutes.

CLXXXI. A member may call for a division of the question if it comprehends distinct subjects.

CLXXXII. No business regularly before the Board shall be interrupted, except by motion for adjournment, for the previous question, viz: "Shall the main question be now put?" and which shall be decided without debate, or for postponement, for commitment, or for amendment.

CLXXXIII. A motion for the previous question must be sustained by at least four members, and shall be decided without debate.

CLXXXIV. A motion for postponement shall preclude commitment; that for commitment shall preclude amendment or decision on the original subject.

CLXXXV. No motion for reconsideration shall be received unless made and seconded by members who voted in the majority, nor unless offered within two stated meetings of the one at which the decision was had on the original question.

CLXXXVI. When a blank is to be filed, the question shall be taken on the largest sum, greatest number, and remotest day.

CLXXXVII. Corrections to the minutes may be moved by any member at the ensuing meeting, provided it shall be shown that the said corrections are required in order to render the minutes an accurate detail of the business transacted at the meeting.

CLXXXVIII. When cases occur not provided for in the above rules, the practice and rules laid down in Matthias' Manual shall govern.

CLXXXIX. No rule shall be suspended or altered except by a vote of two thirds of the members present, unless the same shall have been proposed at a previous stated meeting, when a majority vote shall suffice.

APPENDIX G.

CORRESPONDENCE.

1. Correspondence with Board of Health of city of Philadelphia.
2. Opinion of Robert Snodgrass, Esq , on the Power of the Board to Assign Penalties.
3. Circular of Pennsylvania Railroad Company in regard to Disinfection.

BETWEEN THE SECRETARY OF THE STATE BOARD OF HEALTH AND THE BOARD OF HEALTH OF THE CITY OF PHILADELPHIA IN REGARD TO DANGEROUS INSANITARY CONDITIONS EXISTING OUTSIDE OF THE CITY LIMITS, AND COOPERATION FOR THEIR REMOVAL.

COMMONWEALTH OF PENNSYLVANIA,
STATE BOARD OF HEALTH,
PHILADELPHIA, *September 25, 1885.*

A. A. HIRST, ESQ., *Secretary Board of Health of Philadelphia:*

DEAR SIR: The cases of infectious disease which have been reported to me as existing just outside of the city limits, both by your honorable board and by private citizens, during the brief time which has elapsed since the organization of the State Board of Health, prove unquestionably that the condition of the outlying towns and villages is a constant menace to the health of the city. These districts are, on the one hand, entirely without local health organizations; and, on the other hand, these cases are not of sufficiently frequent occurrence to warrant the State Board in employing a corps of officers for the purposes of inspection, disinfection, vaccination and the abatement of nuisances, It is, therefore, greatly to be desired that some definite arrangement should be consummated, in accordance with which the State Board of Health should be empowered to call upon your experienced officials, either directly or on application to your honorable board, to act as the agents of this Board for the time being. The State Board would, of course, hold itself chargeable with the expense of any such service, if your board so desired. I should be pleased to meet with a committee of your board to arrange the details of such a plan, if the suggestion meets your approval. In the meantime, two cases are pending which call for immediate action—one referred to me by citizens, the other by your own health officer. The first exists at the village of Rosemont, in Lower Merion township, Montgomery county. It consist of a

cow-yard and piggery, kept by one Daniel Kerrigan, at the corner of Montgomery avenue and Roberts' road, which is represented, by a number of neighboring residents, as being filthy and offensive, and a source of disease, cases of typhoid fever having been developed in the immediate neighborhood. I have notified the offender that complaint has been made, but am informed that no improvement has taken place in the unsanitary condition of the premises. The other consists in the existence of several cases of typhoid fever at West Fernwood, Delaware county. The first would require the services of a medical inspector and an inspector of nuisances, the second of a medical inspector only at present. The health officer, Major Veale, has kindly given me the name of Mrs. G. Callaghan, living near the station at Fernwood as able to give particulars, and while I shall make personal inquiries in regard to the matter, I should esteem it a favor if your medical inspector would also give it his attention. In these particular cases, and until some definite understanding can be reached, I see no reason why I cannot delegate the authority intrusted to me, as executive officer of the State Board, for these unprotected districts, to your honorable board, so that its action in the premises would be entirely legal and valid as though taken by our own. Our Executive Committee holds a meeting at this office to-morrow, at 12.30, P. M. If the reply of your board could reach me before that time, action could be taken upon it at once.

I have the honor to be,

Yours, very respectfully,

BENJAMIN LEE,
Secretary.

HEALTH OFFICE,
PHILADELPHIA, *September 25, 1885.*

BENJAMIN LEE, M. D., *Secretary of the State Board of Health:*

SIR: Your letter of September 25, 1885, in which you comment upon the want of sanitary supervision in villages and places in the counties adjoining Philadelphia, as illustrated by the cases of Rosemont and Fernwood, has been duly received. You allude to the fact that so long as these places are unprovided with health organizations, an outbreak of contagious disease may prove a menace to the health of Philadelphia, and suggest that, for self-protection, some arrangement might be made by which the officers of the Board of Health might be authorized to perform services in the adjoining counties, in special cases, under the sanction of the State Board. Your object, namely, the restriction and prevention of contagious and infectious diseases, is a most desirable one, and we hope it may be accomplished; but the means you suggest, we fear, are impracticable. So far as authority is concerned, we believe you have the power to confer it upon persons of your selection; but our officers, with the exception of

the vaccine physicians, are paid a definite salary for definite work within the county limits, and we doubt our right to enter into a permanent arrangement by which their services shall be employed in adjoining counties, at an extra compensation, although paid by the State Board of Health. The vaccine physicians are paid for each case of successful vaccination, and are at liberty to vaccinate outside of the city limits, and receive compensation from other bodies, provided the work in their district does not suffer in consequence. Emergencies may arise in which it would be fatal to hesitate upon strict technicalities, but an arrangement for regular stated work, however advantageous, could not properly be entered into. We would most respectfully suggest that one or more qualified physicians be selected for such sanitary work as may occasionally be required in the counties mentioned, who shall act under the guidance of the State Board of Health, and that an effort be made to induce the authorities of said counties to organize a health board, or appoint a health inspector to have charge of all matters of a sanitary character. Whenever in our power, our desire is to extend to the State Board of Health the most hearty coöperation. In the present emergency, the medical inspector has been authorized to investigate the cases to which attention has been called (without compensation except for transportation,) until some plan shall have been determined upon. The Sanitary Committee of this Board has been requested to meet the Secretary of the State Board at this office, at 12, M., on October 1, for the purpose of consultation.

Yours, respectfully,

A. A. Hirst,
Secretary.

In compliance with the request of the Secretary, the Philadelphia Board of Health courteously authorized Medical Inspector Taylor and Disinfector Kennedy to report at the meeting of the Executive Committee alluded to in the above correspondence, for instructions. These officers visited both the localities referred to, and the reports of their inspections will be found under the proper headings.

A conference took place between the Secretary and the Sanitary Committee of the Philadelphia board, on the first day of October, and while it was evident that no such permanent coöperative action as that suggested was practicable, the committee assured the Secretary that in cases of great emergency they would not allow trifling objections to stand in the way of measures demanded for the protection of the health of the city, and also threw out many practical suggestions of great value to the Board in its work of organization.

Benjamin Lee,
Secretary.

THE POWER OF THE BOARD TO AFFIX CERTAIN PENALTIES TO CERTAIN MISDEMEANORS, WITHIN THE GENERAL LIMIT OF PENALTY ASSIGNED BY THE ACT.

Certain of the regulations adopted by the Board carry with them the assignment of penalties for the infraction or neglect of those regulations. The authority of the Board to affix such penalties having been called in question, the Secretary was instructed to solicit an opinion from the Honorable the Attorney General of the State, as to the powers of the Board in this respect.

The following is the reply of the Hon. Robert Snodgrass, Deputy Attorney General to the communication of the Secretary.

COMMONWEALTH OF PENNSYLVANIA,
OFFICE OF ATTORNEY GENERAL,
HARRISBURG, *November 20, 1885.*

DR. BENJAMIN LEE,

Secretary State Board of Health, 313 S. Fifteenth Street, Phila.

DEAR SIR: On behalf of the Attorney General, I have the honor to acknowledge the receipt of your communication of the 16th inst., requesting his opinion as to the power of your Board to impose penalties under the provisions of the act of June 3, 1885, entitled "An act to establish a State Board of Health for the better protection of life and health, and to prevent the spread of contagious and infectious diseases in this Commonwealth," and beg to reply as follows:

As I read this act, there are two classes of regulations which the Board is authorized to make; one general in its nature, and intended to be covered by the provision of the fifth section, and the other special, or rather applicable to the special cases designated in the sixth section.

In respect to the former, I think, that the power of the Board is to be exercised independently of the courts, and that it is consequently authorized to enforce its regulations in that regard in such manner as will best accomplish the purposes of the act.

The regulations, however, contemplated by the sixth section stand on a different footing. They relate to the abatement and removal of nuisances and the cause of special disease or mortality," which in the very nature of things could not be successfully abated or controlled by general regulations.

The Legislature evidently foresaw this, and hence empowered the Board "to order nuisances or the cause of any special disease or mortality to be abated and removed, and to enforce such quarantine regulations" as it might direct, in cities, boroughs, districts, and places having no local board of health, etc., and for a violation of *any* "*such order*" imposed a fine not exceeding one hundred dollars at the discretion of the court.

Under this reading of the law it follows, that the State Board of Health

has full authority and control as to the enforcement by penalties or otherwise, of general regulations under the statute, but as to the special regulations or orders under the sixth section, the Board has no authority to prescribe penalties, which in such cases are left to the discretion of the court, upon prosecution and conviction as in other cases.

In formulating your regulations, therefore, and in prescribing specific penalties for their violation, I think you should confine them to such as are intended to be of general application in carrying out the provisions of the act, whilst in respect to special orders or regulations, which it may become necessary to issue in special cases; you can do no more than call attention to the act, and the penalty which will follow a violation of such orders or regulations.

Very respectfully,

ROBERT SNODGRASS,
Deputy Attorney General.

SANITARY PRECAUTIONS OF THE PENNSYLVANIA RAILROAD COMPANY.

PENNSYLVANIA RAILROAD COMPANY,
OFFICE OF THE GENERAL MANAGER,
PHILADELPHIA, PA., *October 27, 1885.*

Dr. JOSEPH F. EDWARDS,
Chairman, etc., 224 South 16th Street, Philadelphia:

DEAR SIR: Your favor of the 23d inst., addressed to the president, has been referred to me for reply. I beg to enclose herewith circular in regard to disinfection issued last spring.

The directions therein given have been, we think, carefully adhered to, and with good results.

The circular refers more particularly to the use of preventives against cholera, but is equally applicable, we believe, as against infectious or malarial diseases. If there are any special inquiries to which you would like to have replies, I will be glad to furnish the same upon application.

Yours truly,

CHARLES E. PUGH,
General Manager.

PENNSYLVANIA RAILROAD COMPANY.

[Philadelphia, Wilmington & Baltimore railroad, Northern Central railway, Baltimore & Potomac railroad, Alexandria & Fredericksburg railway, Alexandria & Washington railroad, West Jersey railroad, Camden & Atlantic railroad, Camden & Philadelphia Steamboat Ferry Company, West Jersey Ferry Company.]

CIRCULAR IN REGARD TO DISINFECTION.

In view of the possible appearance of cholera in this country, the attention of all employés is called to the following points in regard to disinfection, and general preventive measures against disease:

The most important means of preventing infectious disease is cleanli-

ness—cleanliness not only of the body, but also of surroundings. No disinfectant can take its place. All shops, stations, and adjacent grounds as well as the tracks between stations, should be kept scrupulously clean. Decaying animal or vegetable matter, so often the home of disease, should, where practicable, be burned. Privies should be scrubbed with soap and water not less than once in two weeks. Drains and sewers should be flushed with fresh water as often as once a week, if the water-supply will permit. Passenger cars should be thoroughly ventilated, and the plush beaten frequently. The paint and glass should be washed at least once in two weeks. The closets and floors of passenger cars should be washed at least once a week with "P. R. R. Disinfectant," according to the directions given. Freight cars at stations should be cleaned before leaving the station, and if the refuse taken from these cars cannot be satisfactorily disposed of otherwise, it must be burned.

Too great care cannot be exercised in keeping the water-supply used for drinking and household purposes free from contamination; impure water being one of the most effective means of generating and spreading disease. Privies and stables, and the outlets of drains and sewers are frequently so located that the drainage therefrom finds its way readily into the water-supply. In some cases this is, without doubt, unavoidable, but were practicable, the location should be such that this drainage must soak through as large an amount of earth as possible, or, after reaching a stream, must be exposed to the sun and air for as long a time as possible before the water is used. As a rule, it is better to take water-supply from rapidly running streams than from any other source, and always some distance above the nearest contamination. Springs, where the high land surrounding them is free from impure drainage, are excellent sources of water-supply. Wells, especially those near dwellings, should be avoided. In all cases where a water suspected of contamination must be used for drinking or cooking purposes, such water should be boiled and then allowed to cool and settle before it is used. Garbage and rubbish of all kinds near the water-supply may be a source of disease, and such material should be burned or removed.

The following disinfectants are recommended:

First. P. R. R. Disinfectant. This disinfectant is in the liquid form, and is applicable everywhere. Full directions for its use accompany each package. It will be furnished in boxes holding two dozen bottles, upon requisition from Altoona shops.

Second. Sulphate of iron or copperas. This is one of the best common disinfectants, and its virtues and cheapness commend it to general use. It is applicable in all places where iron stain is no detriment. It should be used freely in the vaults of privies, in cesspools, along the edges of open drains, in sinks, and all sewer connections, and in wet places wherever there may be decaying animal or vegetable matter. It must be used neither on fabrics, on floors, nor on painted surfaces. The best method of applying this

disinfectant is to dissolve it in water, about two pounds to the gallon, and then pour or sprinkle the liquid in the places where required.

Third. The battery residues from the ordinary telegraph battery, mixed with common salt, form an excellent disinfectant. The residues should be mixed with common salt in the proportion of a pound and a half of salt to the gallon of residue. The disinfectant thus prepared may be used everywhere in the same manner as "P. R. R. Disinfectant," and in place of it.

Fourth. Ice is very valuable in preventing decomposition, and in this sense is a good disinfectant. It may be used with great advantage on passenger cars, and in all places where the supply will admit. A lump of ice should be carried in the urinal of every passenger car while the car is in service.

If at any time a case of infectious disease is found at a station, in a passenger car, or elsewhere on the company's property, a physician should be immediately sent for. The car should be removed from the train as soon as practicable, the doors locked, and it should not again be used until it has been fumigated.

All employés are expected to heartily coöperate in the above measures for preventing disease, and they are earnestly recommended to apply them also at their own homes.

CHARLES E. PUGH,
General Manager.

CORRESPONDENCE IN REFERENCE TO THE APPROPRIATION OF CONGRESS FOR AIDING LOCAL QUARANTINE AUTHORITIES.

COMMONWEALTH OF PENNSYLVANIA,
STATE BOARD OF HEALTH,
PHILADELPHIA, *August 5, 1885.*

To His Excellency GROVER CLEVELAND,
President of the United States:

SIR: I am instructed by the "State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania," to inform Your Excellency that the law creating this Board was passed May 26, 1885, and approved by His Excellency, the Governor of the Commonwealth, June 3, 1885. In accordance with its provisions, the Board organized July 2, 1885, by electing Ed. Wm. Germer, M. D., of Erie, to be its President, and appointing Benjamin Lee, M. D., of Philadelphia, as its Secretary. The executive office of the Board will be at No. 313 South Fifteenth street, Philadelphia. The Board desires to remind Your Excellency that the port of Philadelphia, lying within its jurisdiction, will be a point of great exposure to the invasion of Asiatic cholera, and to request that, if at any time in the judgment of the Board, it shall seem essential to the public safety to take measures involv-

ing the outlay of considerable amounts of money in order to prevent such a calamity, this Board may receive either directly from Your Excellency, or through the agency of the National Board of Health, such portion of the appropriation made by the late Congress in view of such anticipated emergency as may be necessary to carry out the plans of the Board, and of the local health authorities, for the common defense.

I have the honor to be, with great respect,

Your Excellency's most obedient servant,

BENJAMIN LEE,
Secretary.

TREASURY DEPARTMENT,
OFFICE SUPERVISING SURGEON-GENERAL,
U. S. MARINE HOSPITAL SERVICE,
WASHINGTON, *August 13, 1885.*

BENJAMIN LEE, M. D.,
Secretary State Board of Health, Philadelphia, Pa.:

SIR: I have the honor to acknowledge the receipt, by reference of your letter of the fifth instant, addressed to the President of the United States, requesting to be placed on the same footing in your relations to the General Government as similar organizations, &c., and have in reply to inclose to you a circular giving the method of the extension of aid to State Boards in the event of a threatened or actual epidemic.

In relation to this matter, permit me to bring to your attention the fact of the maintenace by the Government of a United States inspection and quarantine station at the Delaware Breakwater, and to say to you that this bureau will cheerfully coöperate with, and consider any recommendations that you may desire to make concerning the passage or treatment of vessels, bound for any point within your Commonwealth, passing the Breakwater station, so far as the same may be considered compatible with the general interest. The inspections abroad are being maintained as usual.

I shall, at all times, be glad to receive any suggestions from your Board.

Very respectfully,

JOHN B. HAMILTON,
Supervising Surgeon-General, M. H. S.

[Circular.]

Threatened or Actual Epidemics.

Treasury Department,
Office Supervising Surgeon-General,
U. S. Marine Hospital Service,
Washington, D. C., *August 9, 1882.*

To Medical Officers of the Marine Hospital Service and Officers of State and Municipal Boards of Health:

I am directed by the Secretary of the Treasury to inform you that Congress, at its last session, enacted that:

"The President of the United States is hereby authorized, in case of a threatened or actual epidemic, to use a sum not exceeding one hundred thousand dollars, out of any money in the treasury not otherwise appropriated, in aid of State and local boards, or otherwise, in his discretion, in preventing and suppressing the spread of the same, maintaining quarantine at points of danger, and making maratime inspections, 1884."

He further directs me to inform you that the President has decided to employ this contingent appropriation through the agency of the Treasury Department, and that, in case of a threatened or actual epidemic, immediate action will be taken upon application from the Governor of a State addressed to the secretary of the treasury.

JOHN B. HAMILTON,
Supervising Surgeon-General, Marine Hospital Service.

PUBLIC SCHOOLS AS DISEASE-PROPAGATORS.

Lancaster Public Schools.
Lancaster, Pa., *September 26, 1885.*

E. W. Germer, M. D.,
President State Board of Health:

Dear Sir: As all sanitary measures should not only regard the present, but also look to the future, and as physiological science seems clearly favorable to the theory that tuberculosis may be contracted by the inhalation of air exhaled by persons suffering from this disease, I would most respectfully ask your Board to consider the propriety of examining into this subject, for if this should be found to be true, the children in the schools should be protected against this fatal disease by the dismissal of teachers so affected, and the passage of an act rendering the employment of all such persons as teachers illegal.

Yours respectfully,
R. K. BUEHRLE.

Summit Hill, Pa., *October 17, 1885.*

Benjamin Lee, A. M., M. D.,

Dear Sir: I write to thank you for the courtesy shown me in forwarding me a copy of the "Act to establish a State Board of Health," together with the accompanying circular.

I have been taking a good deal of interest in the subject of public health for many years, and I rejoice that now at last, our Legislature has taken at least one step towards the protection of the lives of the citizens of our Commonwealth. The feelings and sentiments of the people at large are not in as sound a condition as might be desired on this subject, and I have no doubt it will take many years before a public opinion can be created favorable to sensible sanitary legislation. In this locality the public schools are the principal means through which contagious diseases are disseminated. Just now we have an epidemic of whooping-cough which emanates from the public schools as from a common focus.

Not long since, we had scarlet fever in the neighborhood, and some children attended Sunday-school, whose brothers and sisters lay sick at home of that disease. Instances of teachers, in whose family scarlet-fever prevailed, keeping on at their employment have occurred here. I have, some years ago, taken the pains of going before the school boards in the neighborhood, and called their attention to these evils but with very little effect. Can there be nothing done about the matter? I will be only too glad to be of any service to you.

I am, etc.,

A. J. DONNELLY, M. D.

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